

**Dyad Function-Based Cognitive Behavioural Therapy as a Treatment for
Obsessive Compulsive Disorder in Two School Aged Children with High
Functioning Autism**

Elizabeth Rombough, BA (Hons)

The Centre for Applied Disability Studies

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Abstract

Children with High-Functioning Autism (HFA) are more vulnerable to developing Obsessive Compulsive Disorder (OCD) than typically developing children and those with Low-Functioning Autism (Gadow et al., 2005). This study used a multiple baseline design across behaviours (Cooper, Heron, & Heward, 2007) to investigate if a two phase function-based Cognitive Behaviour Therapy (CBT) would decrease obsessive compulsive behaviours (OCBs) in two children ages 7 and 9 who met criteria for OCD and HFA. This multimodal treatment package consisted of treatment enhancements to meet the children's cognitive, linguistic, and social challenges associated with their HFA diagnosis, as well as a manual and accompanied children's workbook (Vause, Neil, & Feldman, in progress). In line with previous research conducted on CBT as a treatment for OCD in this population (e.g., Wood et al., 2009), the children in this study experienced clinically significant decreases in their OCBs as a result of receiving the CBT protocol.

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**Dyad Function-Based Cognitive Behavioural Therapy as a Treatment for
Obsessive Compulsive Disorder in Two School Aged Children
with High Functioning Autism**

Autism Spectrum Disorders (ASDs) is a general term that encompasses neurodevelopmental disorders including Autistic Disorder, Asperger Syndrome (AS) and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS). ASDs are characterized by qualitative delays in socialization and communication development, as well as repetitive and/or restrictive behaviours (Hollander, Wang, Braun, & Marsh, 2009). Recent epidemiological studies state that ASDs may be as common as 1 in every 152 children, with boys being four times more likely than girls to develop one of the above disorders (White, Oswald, Ollendick, & Scahill, 2009). There is a growing number of studies demonstrating that children with ASD also meet the diagnostic criteria for mental health challenges such as Obsessive Compulsive Disorder (OCD).

Seven studies report prevalence of OCD in children with Autism, which ranges from 1.5% to 81% ($M = 16.7\%$) (Bruin, Ferdinand, Meester, Nijs, & Verheij, 2007; Gadow, Devincent, Pomeroy, & Azizian, 2005; Ghaziuddin, Tsai, & Ghaziuddin, 1992; Le Couteur et al., 1989; Muris, Steerneman, Marckelbach, Holdrient, & Meester, 1998; Rumsey, Rapoport, & Sceery, 1985; Weisbrot, Gadow, DeVincent, & Pomeroy, 2005). If mental health issues including OCD are left untreated in this population, serious consequences may occur for these individuals and their families. Co-morbid psychological disorders can further exacerbate core deficits of an ASD diagnosis and affect general adaptive

functioning. Specifically, this can lead to additional challenges associated with peer interaction, compromises to the effectiveness of educational interventions, and a decrease in quality of life for these individuals and their families (Barton & Heyman, 2009; Bellini, 2004; Meyer, Mundy, Vaughan Van Hecke, & Durocher, 2006; Tantam, 2000).

Research has repeatedly demonstrated that children with High Functioning Autism (HFA) (those who are verbally fluent and possess an IQ above 70) are more vulnerable to developing OCD when compared to typically developing children and those with Low Functioning Autism (Gadow, Devincent, Pomeroy, & Azizian, 2005). Although research has been conducted on individual and group Cognitive Behavioural Therapy (CBT) as a treatment for OCD in typical children, few studies have investigated these variants of CBT as treatments for OCD in children with HFA (Wood et al., 2009). The present research will be the first study with experimental control to examine the use of a dyad CBT as an intervention for OCD in children with HFA.

OCD in Typically Developing Children

OCD is a neurodevelopmental challenge that affects as many as 2 to 3% of children and adolescents (Freeman et al., 2006). According to the DSM-IV-TR (APA, 2000) obsessions are intrusive, persistence thoughts, images, and/or impulses which are often accompanied by negative affects such as fear, disgust, doubt or a feeling of incompleteness. Compulsions consist of repetitive, purposeful behaviours that are often conducted in a stereotyped fashion or in accordance with specific rules which aid in temporarily neutralizing or alleviating

obsessions and the negative affects associated with them. Note that compulsions can be observable behaviours such as hand washing, or internal mental acts such as praying. The most common compulsions displayed by typical children include counting, repeating, and checking, while the most common obsessions are situated around aggression and contamination (Gregory, 1995; Rapoport & Inoff-Germain, 2000; Storch, Geffken, & Murphy, 2007; Zandt, Prior, & Kyrios, 2007). Although some children only experience obsessions or compulsions, most individuals usually display both.

Additional clinical criteria for an OCD diagnosis includes symptoms causing marked distress, time consumption (obsession and/or compulsions must take up more than 1-hour per day), and significant interferences with a child's education, relationships, and/or normal routine. With regard to age of onset, boys are more likely than girls to have a prepubertal onset, while girls are more likely to exhibit OCD in adolescence (APA, 2000). OCD has been found to co-occur with other neurodevelopmental diagnoses such as Attention Deficit Hyperactivity Disorder and ASDs (Ivarsson, Melin, & Wallin, 2008).

OCD in Children with ASD

Diagnosing OCD in an ASD population can be a daunting task due to the difficulty in distinguishing rigid/repetitive behaviours from the presence of clear obsessions and compulsions (Lehmkuhl et al., 2008; Matson & Dempsy, 2008). Nonetheless, it has been suggested that OCD can be appropriately diagnosed in this population. Fischer-Terworth and Probst (2009) state that children with an ASD display Autism-related obsessive-compulsive phenomena (AOCP) which

can include one or more of the following distinct behaviours that are generally acceptable/ pleasurable in nature: repetitive motor behaviours, insistence on sameness, and circumscribed interests. In contrast, OCD is manifested by displays of more traditional obsessions (e.g., a strong need to know or contamination worries) and compulsions (e.g., excessive hand washing or a repetitive/constant need to ask questions) that are observed in typical children and identified by the DSM-IV (APA, 2000) and Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS; Goodman, Price, Rasmussen, Riddle, & Rapoport, 1986) (Hollander et al., 2009; Fischer-Terworth & Probst, 2009; Reaven & Hepburn, 2003).

Further, OCD differs from the rigid/repetitive behaviours associated with an ASD diagnosis as it tends to cause substantial interferences in an individual's daily functioning, consume an inordinate amount of time, and evoke extreme distress if one is prevented from carrying out a compulsion (Fischer-Terworth & Probst; Reaven & Hepburn). Based upon the DSM-IV-TR (APA) criteria for OCD as well as the differences that exist between the symptoms associated with OCD and ASD, it is possible to accurately diagnosis this anxiety disorder in a child with an ASD.

Short and Long-term Ramifications Associated with an OCD Diagnosis in an ASD Population

Mouridsen, Rich, and Isager (2008) attest that an accurate diagnosis and treatment of an anxiety disorder such as OCD in this population is needed in order to prevent the short and long-term ramifications. The presence of an untreated anxiety disorder in this population can lead to one experiencing a greater inability

to master educational and daily life skills as they must attempt to deal with additional challenging symptoms. Moreover, the presence of an anxiety disorder in a child with ASD increases the probability that he will experience victimization/teasing by peers, higher levels of tantrums and aggression, and less satisfaction/competence in their interpersonal relationships (Bruin et al., 2007; Mouridsen et al., 2008). This additional distress and interference in a child's education, social, and day-to-day life can ultimately hinder his/her quality of life. If anxiety disorders remain untreated in children with ASD, they can lead to more serious long-term repercussions such as: increase in severity of anxiety symptoms, the development of additional anxiety and/or mood disorders, greater deficits in interpersonal relationships resulting in loneliness and low self-esteem, substance abuse, and under/unemployment (Reaven, 2009; Mouridsen et al., 2008). Additionally, family members of children with ASD displaying an untreated anxiety disorder are also negatively impacted by their child's disorders. Higher levels of stress have been found to occur in these individuals as they often experience unhealthy general family functioning, increased management problems, and/or feelings of family burden (Brenton, Tonge, & Einfeld, 2006).

Cognitive Behavioural Therapy as a Treatment for OCD in Typical Children

Thus far, two meta-analyses have compared individual and group CBT with the use of pharmacotherapy as a treatment for OCD in children and adolescents. Abramowitz, Whiteside and Deacon (2005) examined ten CBT studies (including one uncontrolled GCBT study) with pharmacotherapy, while Watson and Rees (2008) compared five CBT studies (including one uncontrolled

and one controlled GCBT study) with pharmacotherapy using a more stringent inclusion criteria. Results from both of these studies demonstrated that CBT produced the largest overall effect size. In the Abramowitz et al. study, the use of CBT as a treatment for OCD generated the highest effect size (ES = 1.40), followed by medication (ES = .82), and placebo (ES = .40). Watson and Rees obtained similar results with CBT having the largest effect size (ES = 1.45) when compared with medication (ES = .48).

Recently, Barrett, Farrell, Pina, Peris and Piacentini (2008) conducted a CBT review in which they compared the variants of this treatment provided to children between the ages of 5 to 17 years of age. Sixteen CBT studies (including three uncontrolled and one controlled GCBT study) were analyzed. The within-group effect sizes using the CY-BOCS (Goodman et al., 1986) scores were higher on the individual CBT studies (ES = 1.57 to 4.32) in comparison to the GCBT studies (ES = .82 to 1.15). The authors noted that these effect size differences were likely due to the limited amount of existing GCBT literature, as well as the lack of controlled studies conducted on GCBT. It was concluded that CBT is efficacious and GCBT is a possibly efficacious psychological intervention (Barrett et al.). Overall, the meta-analyses and this review support the clinical recommendations made by the OCD Expert Consensus Guidelines in which CBT should be the first-line of treatment for childhood/adolescent OCD (Abramowitz et al., 2005; Barrett et al., 2008; Watson & Rees, 2008).

Preliminary Research Conducted on GCBT for Typical Children and Adolescents with OCD

Four uncontrolled and two controlled trials have been conducted on GCBT as a treatment for OCD in typical children and adolescents. See Appendix A for a table providing details on the uncontrolled GCBT trials. Barrett et al. (2004) conducted the first randomized-controlled trial (RCT) comparing the effectiveness of the variants of CBT as a treatment for OCD in typical children and adolescents. Seventy-seven participants between the ages of 7 to 17 were randomly assigned to an individual CBT ($n = 24$), GCBT ($n = 29$), or waitlist condition ($n = 24$). The CY-BOCS (Goodman et al., 1986), the Anxiety Disorders Interview Schedule for Children-Parent Version (ADIS-P; Silverman & Albano, 1996), the National Institute of Mental Health Global Obsessive-Compulsive Scale (NIMH-GOCS; Insel, Hoover, & Murphy, 1983), and the Multidimensional Anxiety Scale for Children (MASC; March, 1997) were used to assess participants' OCD diagnosis and symptom severity.

March and Mulle's (1998) OCD treatment manual, which consists of awareness training (AT), cognitive training (CT), and exposure plus response prevention (ERP), was adapted to a group format and provided to participants in groups of three to six. Both treatment groups received a total of 14-weekly, 90-minute CBT sessions. At post-treatment a weighted average of the two CBT treatments demonstrated a large effect size ($ES = 2.76$) (Barrett et al., 2004; Freeman et al., 2006). Follow-up data was collected up to 18-months, with treatment gains maintained across time and measures. No significant differences were found between participants in the two treatment conditions (Barrett, Farrell, Dadds, & Boulter, 2005).

A second controlled GCBT study was conducted by Asbahr et al. (2005) using an RCT. Forty participants between the ages of 9 to 17 were placed into a Sertraline ($n = 20$) or GCBT ($n = 20$) condition. Participants in the GCBT condition received 12-weekly, 90-minute sessions, based upon March and Mulle's (1998) OCD treatment manual, which like the Barrett et al. study, was adapted to a group format. The CY-BOCS (Goodman et al., 1986) was used as the primary measure for rating severity of OC symptoms and was administered during pre- and post-treatment, as well as at 9-month follow-up. At post-treatment, participants in both conditions experienced an almost equally significant reduction in OC symptoms. However, at follow-up only 5.3% of participants in the GCBT group experienced a relapse in symptoms, while 50% of participants in the Sertraline group did. These results suggest that GCBT has greater long-term durability than medication in the treatment of childhood and adolescent OCD (Asbahr et al.). Although there is currently a limited amount of research conducted on GCBT as a treatment for OCD in children, the research that does exist marks significant advances in the treatment of childhood OCD (Barrett et al., 2008).

Preliminary Research Conducted on GCBT for Anxiety and OCD in Children and Early Adolescents with HFA

Researchers have investigated the use of GCBT for individuals with HFA displaying the following anxiety symptoms/disorders: Separation Anxiety, Specific Phobia, Social Phobia, Panic Disorder, and Generalized Anxiety Disorder. See Appendix B for a table describing the details of these studies. The

reason why children with OC symptoms or OCD as defined by the DSM-IV (APA, 2000) are excluded from these studies is because empirical evidence suggests that the active ingredients of the CBT protocol for this disorder, such as ERP, differ qualitatively from the CBT protocols used to address generalized and social anxiety symptoms (Barrett et al., 2004; March & Mulle, 1998). To date, two studies have been conducted which have investigated GCBT as a treatment for OC symptoms and OCD as defined by the Spence Child Anxiety Scale-Parent Version (SCAS-P; Nauta et al., 2004), CY-BOCS (Goodman et al., 1986) and/or the NIMH-GOCS (Insel et al., 1983).

In Sofronoff, Attwood and Hinton (2005), participants displaying OC symptoms were included in their randomized control trial (RCT) evaluating the effectiveness of a GCBT protocol for anxiety symptoms in children with HFA. Participants consisted of 71 children between the ages of 10 to 12 who were randomly assigned to a GCBT, GCBT with parental involvement, or waitlist condition. Participants in the treatment conditions received six 2-hour weekly sessions, provided in groups of three children, and led by two therapists. The GCBT protocol, *Exploring Feelings* (Attwood, 2004), consisted of the following main components: educating/exploring the children's emotions, developing different tools to combat OCD, a protracted cognitive component, and designing individual programs to manage anxiety. CBT modifications were made to address the challenges associated with the children's HFA diagnosis and included: affective education, the use of social stories, and activities aimed at improving children's range of emotional repair mechanisms. The SCAS-P (Nauta et al.,

2004) was used to measure children's anxiety at pre-treatment, post-treatment and a 6-month follow-up. Although post-treatment scores on this measure significantly decreased for participants in both GCBT conditions, the greatest reductions occurred for those who received the GCBT with parental involvement. Results of this study demonstrate that the GCBT protocol utilized in this study was effective in reducing OC symptoms in children with HFA.

Additionally, Martin and Thienemann (2005) used an uncontrolled open trial to assess the use of GCBT as a treatment for OCD in children and early adolescents. Fourteen participants between the ages of 8 to 14 (including four with a diagnosis of ASD or Non-Verbal Learning Disorder) partook in this study. March and Mulle's (1998) manual was utilized and adapted to a group format. Fourteen 90-minute sessions were provided to groups of 5 to 9 participants. Results on the children's CY-BOCS (Goodman et al., 1986), Child Obsessive Compulsive Impact Scale (COIS; Piacentini & Jaffer, 1999), and the NIMH-GOCS (Insel et al., 1983) scores at post-treatment demonstrated clinically and statistically significant improvement in the children's OCD as well as a lessening of impairments in one's daily life due to OCD. Although children with an ASD were included in this study, treatment gains for this specific population were not assessed.

Collateral Benefits Associated with GCBT

Social benefits. It has been proposed that the group format of CBT provides a natural opportunity for growth in positive social interactions for individuals with HFA (Chalfant, Rappe, & Carroll, 2007; Reaven et al., 2009).

Parent reports obtained at post-treatment in the Sofronoff et al. (2005) study demonstrated that the group format was the first time that many parents observed their child interact in a positive and relaxed manner with peers and adults, as well as form positive/reciprocal friendships, gain a better insight into understanding what happens in interpersonal situations/contexts, and increase confidence in one's daily life interactions.

Practical benefits. GCBT provides benefits which go beyond the social and therapeutic ones discussed. This variant of CBT provides a more cost-effective service than the individual format of this treatment. A reduction in therapists' time means that a decreased cost per session can be provided to clients. Additionally, GCBT can increase accessibility of services for individuals needing assistance in managing and coping with psychological disorders (Bieling, McCabe, & Antony, 2006). Reaven et al. (2009) state that accessibility to psychosocial services is especially needed for children with HFA who display comorbid disorders like OCD as they are often put onto long waitlists for therapeutic treatment.

Current Studies Existing on Individual CBT as a Treatment for OCD in Children with HFA

To date, four studies (three case studies and one RCT with eight participants with OCD) have investigated the use of individual CBT as a treatment for OCD in children with HFA. These studies included participants between the ages of 7 to 12 years of age who exhibited a variety of obsessions and compulsions. Obsessions displayed by these individuals included contamination,

aggression, a strong 'need to know', and loss of possessions, while their compulsions consisted of hoarding, frequent hand washing, a repetitive/constant need to ask questions, and excessive checking. CBT sessions provided to participants varied from one study to the next, ranging from 16-weekly sessions to 10 sessions provided over a 16-week period. Two of the case studies (Lehmkuhl, Storch, Bodfish, & Geffken, 2008; Reaven & Hepburn, 2003) used March and Mulle's (1998) OCD treatment manual, while Sze and Wood (2007) and Wood et al. (2009) used the *Building Confidence* CBT program (Wood, Piacentini, Southam-Gerow, Chu, & Sigman, 2006).

All four of these studies emphasized parental involvement in the therapeutic process and as well as additional treatment modifications to meet the challenges associated with the children's HFA diagnosis such as: a behaviour reward systems, a simplified cognitive component, incorporation of a child's interests and ideas, emphasis on the use of visuals, role playing, and providing therapeutic choices to the child throughout treatment (Lehmkuhl, et al. 2008; Reaven & Hepburn, 2003; Sze and Wood, 2007; Wood et al., 2009). Studies (Sze and Wood; Wood et al.) have also made enhancements to their CBT protocols to address the social and adaptive skill deficits associated with an HFA diagnosis. Results of these studies demonstrated significant reductions in participants' OC symptoms from receiving CBT. In the Reaven and Hepburn (2003) study, the participant experienced a 65% reduction in symptoms at post-treatment according to the CY-BOCS (Goodman et al., 1986). Throughout various follow-up appointments which were scheduled between 3 to 4-weeks apart, the researchers

of this study noted that the child's OCD symptoms were well controlled. In the Lehmkuhl et al. (2008) study the participant also experienced a significant decrease on his CY-BOCS (Goodman et al., 1986) as well as his COIS (Piacentini & Jaffer, 1999) scores from pre to post-treatment. Specifically, his CY-BOCS scores decreased from 18 (moderate OCD) to 3 (normal range), and his COIS scores dropped from 40 (clinically significant impairments in his day-to-day life due to OCD) to 3 (normal range). These treatment gains were maintained at 3-month follow-up.

Sze and Wood's (2007) participant no longer met the criteria for OCD at post-treatment according to the ADIS-P (Silverman & Albana, 1996). During the booster session, the child in this study did not report experiencing any anxiety, and the researchers anecdotally observed that treatment gains were maintained. Although Wood et al. (2009) did not elaborate on the exact number of children that were diagnosed with OCD who no longer met the criteria for this disorder at post-treatment and the 3-month follow-up, they did report that nine of the 14 participants who received treatment no longer met the criteria for their anxiety disorder(s) at post-treatment and that eight of these children remained diagnosis free at follow-up. Overall, the research conducted on CBT for children with HFA displaying OCD has provided encouraging results for the potential efficacy of this treatment in reducing OC symptoms in this population.

Purpose of the Current Study

The purpose of this investigation was to replicate and extend existing research on CBT treatment for OCD in children with HFA. The therapists created

a CBT manual aimed specifically at treating OCD in children with HFA called *I Believe in Me, Not OCB* (Vause, Neil, & Feldman, in progress) with an accompanied children's workbook. The manual and workbook contain many adaptations from the CBT protocol specified by March and Mulle (1998) for typical children. Like previous research conducted in this realm of study (e.g., Reaven & Hepburn, 2003; Wood et al., 2009), our protocol incorporated treatment enhancements to meet the cognitive, social, and linguistic needs associated with the children's HFA diagnosis (e.g., high parental involvement, use of visuals and concrete language, the incorporation of participant's interests, and a protracted cognitive component).

Further, additional extensions were incorporated into this study to extend upon previous research conducted on CBT as a treatment for OCD in children with HFA. First, function-based assessments and interventions (FBA/Is) were conducted for the target behaviours. This involved systematically identifying potential functions maintaining an OCB and addressing these functions in treatment. Second, the utilization of a children's workbook containing many visuals and activities was designed to assist the children with understanding the various therapeutic components/their own OCBS. Third, to demonstrate experimental control of the function-based CBT protocol, a multiple baseline design across behaviours (Cooper et al., 2007) was used with concurrent video/voice recorded probes and parent report data. Last, individual CBT was embedded into the group format. It was imperative that this type of CBT be

incorporated so that successful individualized function-based treatment plans could be created.

Based upon the literature currently existing on individual/group CBT as a treatment for OCD/anxiety symptoms in children with HFA, the following hypotheses were created:

- (1) As measured by the OCD standardized assessments, parent/researcher reports, and video/voice recorded data, participants will experience clinically significant decreases in their targeted OCBs as a result of receiving the dyad function-based CBT protocol.
- (2) As measured by the secondary outcome measures, participants and their families will experience clinically significant decreases in the daily interferences associated with the children's OCD as a result of the children receiving the dyad function-based CBT protocol to treat their targeted OCBs.

Method

Participants

Michael. Michael, pseudonym, presented as a happy 9-year old boy who enjoyed socializing with adults about topics that interested him. At the age of six he was diagnosed with HFA by a family physician and this diagnosis was confirmed by an independent researcher as Michael met the criteria for ASD according to the Autism Diagnosis Interview-Revised (ADI-R) (Rutter, Le Couteur, and Lord, 2003). Additionally, this child was observed numerous times throughout treatment to display a variety of ASD symptoms including marked

impairments in his ability to initiate/sustain conversations (especially with individuals his own age), echolalia, hand stereotypy, and challenges with being flexible with session changes. For example, if the other participant was unable to attend a session, Michael had to be told a day in advance so he could prepare for this adjustment.

The short form of Weschler Intelligence Scale for Children-4th Edition (WISC-IV) (Weschler, 2004) which consisted of the following subsets: vocabulary, matrix reasoning, symbol search, and arithmetic, demonstrated that Michael's estimated Full Scale IQ Score was 88. The Vineland Adaptive Behaviour Scales-II (parent/caregiver rating form) (Vineland-II) (Sparrow, Balla, & Cicchetti, 2004) assessed his communication (moderately low, score of 72), daily living skills (low, score of 62), and socialization skills (moderately low, score of 75). Results of these cognitive tests in conjunction with Michael's ASD diagnosis, demonstrated that he met the criteria for HFA.

OCD assessment and history. Michael's mother reported that her son had been displaying OCBs for the past two and a half years and that had become extremely conscious about how other children perceived him. One month before intake Michael was prescribed 10 mg of Prozac a day by a pediatrician to reduce experienced anxiety associated with his OCBs. This dose remained stable throughout baseline, treatment, and follow-up. The OCD module of the Anxiety Disorders Interview Schedule's (parent version) (ADIS) (Silverman & Albana, 1996) demonstrated that Michael met the criteria for this anxiety disorder. Additionally, his CY-BOCS (Goodman et al., 1986) score indicated that his OCD

was in the severe range (score of 25), and his COIS-R (Piacentini & Jaffer, 1998) score of 23 suggested that he experienced some significant life impairments due to his OCBs.

A Quality of Life Questionnaire (Feldman, Condillac, Tough, Hunt, & Griffiths, 2002) was also completed with Michael receiving a score of 31 out of 56, indicating that his OCD was interfering in a number of areas in his life such as his daily activities/routines, community integration, and education for example. See Table 1 for a description of these behaviours, listed in the order with which they were treated. An additional OCB was identified during the third treatment session which involved fears associated with getting sick from touching ticks/poison ivy and a need to ask his mother if areas with long grass/unknown weeds were safe to go in. This behaviour was assessed using the questionnaire data and was reported to occur at low levels. For this behaviour, Michael's mother was provided with simple behavioural strategies. During the onset of this study, Michael's OCBs had been reportedly present for 5 months to 1.5 years, with his more severe OCBs occurring for longer durations of time.

Edward. Edward, pseudonym, presented as a quiet, socially withdrawn 7-year old boy who enjoyed solitary activities such as playing with cars and drawing pictures of vehicles and roads. He was diagnosed with HFA by a child psychologist at the age of 2 years, 10 months and his diagnosis was also confirmed by the ADI-R (Rutter et al., 2003). Like Michael, Edward exhibited symptoms throughout treatment associated with a ASD diagnosis including: restricted and stereotyped patterns of play (e.g., he enjoyed lining up

Table 1

*List and Description of Michael's Targeted OCBs as Identified by the CY-BOCS
and OCD Module of the ADIS*

OCB	Obsession	Compulsion
Goodnight Statement	Unknown	Had to say "goodnight, sleep tight, don't let the bedbugs bite" each time someone said "goodnight" to him.
Blocking Coughs	Excessively concerned he would get ill from contamination (especially from brother who was often sick)	Extended arm with palm forward in a blocking manner, turned head in opposite direction, and/or covered mouth/nose with hands whenever younger brother coughed.
Bicycle Helmet Checking	Worried about falling off bicycle and smashing head	Had to ask mother one or more times if helmet was on securely/correctly before he would ride a bicycle.
Germ Reassurance	Excessively concerned he would get ill from contamination	Would ask mother repeatedly if he "caught germs" or if he would get sick while in the presence of someone who was ill.
Weather Reassurance	Feared self and mother wouldn't be safe during a thunderstorm and the power going out	Asked mother numerous questions associated with thunderstorms before/when they occurred (e.g., When will the storm begin/end? Will we be safe indoors? Will the power go out?).
Whiteboard Ritual	Worried about if/when storms would occur	Had to watch the weather network every night so he could write temperature and weather statements (e.g., rain, no thunderstorms) on a whiteboard placed on a chair beside his bed. He would check his whiteboard throughout the night and if there was no scheduled thunderstorm, he would fall back asleep. However, if a thunderstorm was scheduled, he would ask his mother weather reassurance questions.
Reassurance about Doing a Good Job/Things He Already Knew	Strong need to know if he was doing a good job/if something he knew was correct	Asked mother and teachers repetitive questions frequently throughout his day about if he was doing a good job with his schoolwork and daily activities/things he already knew the answer to (e.g., what the temperature of his pool was after he just looked at the thermometer).

blocks and cars), profound sensitivity to olfactory stimuli which occasionally resulted in him vomiting if he smelt something that was unpleasant to him,

marked impairments in his ability to initiate/sustain conversations, and challenges with being flexible with session activity/routine changes. According to the short-form of the WISC-IV (Weschler, 2004), Edward's estimated Full Scale IQ score was 88.

His assessment on the Vineland-II identified that his communication functioning was in the moderately high range (score of 116), his daily living skills were adequate (score of 91), and his socialization skills were moderately low (score of 81). Although Edward scored in the moderately high range in the communication subdomain, it is probable that this is an inflated value as observations in session and from the video/voice recorded probe data demonstrated that he frequently needed his mother to assist with explaining his ideas/thoughts and often had trouble understanding questions/following directions. Based upon the results obtained from Edward's cognitive tests as well as his ASD diagnosis, it can be concluded that he met the criteria for HFA.

OCD assessment and history. Edward's mother reported that her son had always been an anxious individual, even as a toddler. It was reported that didn't begin to speak until he was 4 years old and would often cry, scream, and/or refuse to do activities when he became bothered or upset. According to the ADIS (Silverman & Albana, 1996), he met the criteria for this anxiety disorder, and his CY-BOCS (Goodman et al, 1986) score of 34 demonstrated that his OCD was in the severe range. His COIS-R (Piacentini & Jaffer, 1998) score of 54 suggested that he experienced significant life impairments as a result of his OCBs, and his score on the Quality of Life Questionnaire (Feldman et al., 2002) of 46 indicated

that he experienced significant interferences in his day-to-day functioning due to OCD.

See Table 2 for a description of these behaviours, listed in the order with which they were treated. Edward also displayed a need to tell family members to wash their hands after coughing/blowing their nose or leave the room when passing gas, which according to the parent report data was occurring at low frequencies. His mother was therefore provided with behavioural strategies for tackling this OCB. At the onset of this study, Edward's OCBs were reported to occur for one to four years, with his more severe OCBs occurring for longer durations of time.

Table 2

List and Description of Edward's Treated OCBs as Identified on the CY-BOCS and OCD Module of the ADIS

OC Behaviour	Obsessions	Compulsion
Crumb Removal Requests/Running from Table	Excessively concerned he would get ill from contamination and that the crumbs were bugs	Asked mother to remove crumbs/ perceived crumbs from the kitchen table before most meals, and/or would run from the table in the presence/perceived presence of crumbs.
Bedtime Ritual	Feared would have nightmares if bedtime ritual did not occur	Had to have father scratch his left foot on the bottom, followed by his right foot on the top every night before going to bed. If his father was not home to do this, he would have a difficult time falling asleep and would often stay up until his father returned home so he could perform the ritual.
Hair and Fluff Removal Requests/Running from Bathroom	Excessively concerned he would get ill from contamination	Asked mother to remove hair/fluff or perceived hair/fluff from the bathroom sink/bathtub before brushing teeth/having a bath, and/or would run from the bathroom in the presence of/perceived presence of hair/fluff. He occasionally vomited at the sight of hair/fluff in the bathroom sink/bathtub.

Setting

This study took place at the Jack and Nora Walker Lifespan Development Research Centre located at Brock University. This research centre mimicked a clinical setting as it consisted of many meeting, observation, and waiting rooms. CBT sessions were held in a large open meeting room with floor to ceiling windows and ample room to move around in. Several chairs, tables, and a video camera were located in this room. Michael attended nine CBT sessions to decrease his targeted OCBs, while Edward attended 12 sessions. Out of the nine sessions that were scheduled for the children, six were attended by both. Absences were due to unforeseen medical ailments/family matters that arose, with missed sessions rescheduled within the same week. An interview room, with one table and a few chairs, was utilized when the parent-child dyads broke off and worked independently on specific OCBs, with Edward spending approximately half of five sessions in this room.

This interview room was also used for conducting pre-post assessments, role playing ERP homework assignments/function-based interventions, and providing parent training on OCD/discussing their child's OCBs. Edward had his last session and post-test assessments conducted in his home, and following the nine sessions scheduled at the Centre, Michael received two booster sessions in his home. Nine of the 12 CBT sessions were conducted by two master's students, while the remaining two sessions were conducted by one student as it was only Edward receiving a CBT session. A professor with a PhD in Clinical Psychology also attended 8 of the 12 CBT sessions to observe, provide immediate feedback to

the MA students about the therapeutic process, and assist with increasing Edward's compliance by attending five of his parent-child dyad portions of treatment.

Materials

ASD assessment.

Autism Diagnostic Interview - Revised (ADI-R). The ADI-R (Lord, Rutter, & Couteur, 1994) is a clinical, semi-structured diagnostic tool that is used for assessing ASD in children and adults over the age of 18 months with a mental age of 24-months or above. The ADI-R involves a caregiver interview in which 93-items situated around communication, social development and play, enquiries about repetitive and restricted behaviours, and general behaviour problems are asked to determine if an ASD diagnosis is warranted. Items are coded using a Likert scale which range from 0 (*behaviour not present*) to 2 (*behaviour often present*). Lord et al. state that the ADI-R has strong psychometric properties as it consists of high interrater reliability (.89), and excellent test-retest reliability for the five sections of this assessment (.93 to .97).

Cognitive assessments.

Wechsler Intelligence Scale for Children Short Form- Fourth Edition (WISC-IV). The WISC-IV (Wechsler, 2004) is a clinician administered instrument used for assessing the cognitive ability of children between the ages of 6 years to 16 years and 11 months. This instrument assesses individuals in ten subsets which make up four domains: verbal comprehension, perceptual reasoning, working memory, and processing speed domain. The WISC-IV is often

used to assess the cognitive abilities of individuals with ASD as it captures their visual reasoning strengths and is able to identify their gross motor, attention, processing speed, language comprehension, and social reasoning weaknesses. It has been described as the epitome of a well-designed and researched assessment tool as it has very good test-retest reliability, split-half reliability, and concurrent validity (Mayes & Calhoun, 2007). In this study, the short-form of the WISC-IV was utilized, consisting of the following four subtests: vocabulary, matrix reasoning, symbol search, and arithmetic. The short-form version of this instrument has been found to have excellent predictive validity (.93) when utilized with children with HFA whose subtest profile may be atypical (Minshew, Turner, & Goldstein, 2005; Sattler, 2008).

Vineland Adaptive Behaviour Scales-II (Vineland-II). The Vineland-II (Sparrow, Balla, & Cicchetti, 2004) is a well-standardized, rating form that is used to assess individuals of all ages on various social adaptive behaviours. This assessment is the most studied measure of adaptive behaviour and is reliable and valid at documenting adaptive delays in individuals with a ASD. The Vineland-II consists of four domains that assess communication (receptive, expressive, and written), daily living skills (personal, domestic, and community), socialization (interpersonal relationships, play and leisure time, and coping skills), and motor skills (gross and fine motor). Items are scored as 0 (*never*), 1 (*sometimes; partially*), or 2 (*usually*). The scoring system yields an adaptive behaviour composite score, individual and sub-domain scores, and an age-equivalent score. Studies utilizing the Vineland-II for children with an ASD have demonstrated

good reliability. More specifically the Vineland-II has been found to have interrater reliability between .80 and .95 and test re-test reliability ranging between .77 and .91 (Paul et al., 2004). In this study, the parent self-administered report form was used.

OCD assessments.

Anxiety Disorders Interview Schedule – Parent Version (ADIS). The ADIS (Silverman & Albano, 1996) is a semi-structured interview designed to assess current episodes of anxiety disorders in individuals between the ages 6 to 17-years of age, and permit differential diagnosis among the anxiety disorders according to the DSM-IV (APA, 2000). In this study, only the OCD module was used. This instrument has been found to have the best psychometric properties out of any of the diagnostic tools used to assess childhood anxiety disorders. The inter-rater agreement for the parent version of the ADIS has good to excellent inter-rater agreement (Kappa coefficient values ranging from .73 to .92). Furthermore, this instrument has excellent test-retest reliability of the parent version of the ADIS, ranging from .81 to .96. (Barrett et al., 2004; Silverman, Saavedra & Pina, 2001). This OCD tool, as well as the one described below, were utilized as pre and post measures in this study.

Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS). The CY-BOCS (Goodman et al., 1986) is a clinician administered semi-structured interview given to a child and/or their parent(s), depending on the clinician's judgment. This instrument is meant to assess OCD in children between the ages of 6 to 17-years of age, and consists of two scales assessing obsession severity (5-

items) and compulsion severity (5-items). The CY-BOCS explicitly takes into account a child/adolescent's distress, interference, degree of resistance, control, and time consumption related to their OCD. Scores are categorized, based upon one's presenting anxiety as mild (score of 8-15), moderate (score of 16-23), severe (score of 24-31), or extreme (score of 32-40). This CY-BOCS is considered to be the gold standard for assessing pediatric OCD as it contains high internal consistency ranging from .87 to .90, good to excellent inter-rater reliability for subscales and total score, and adequate test-retest reliability for obsession severity .70, compulsion severity .76, and the total score .79 (Storch, Geffken, & Murphy, 2007).

Functional assessments.

Questions about Behaviour Function (QABF) – Revised. The QABF (Maston & Vollmer, 1995) is the best known and most researched rating scale for indirectly assessing the function(s) of aberrant behaviours exhibited by individuals with developmental delays. This tool consists of 25-items that take into account five behaviour function domains: social attention, escape, access to tangibles, physical discomfort, and nonsocial reinforcement. The items are rated on a 4-point Likert scale regarding how often the target behaviour occurs in a particular context, and ranges from 0 (*never*) to 3 (*often*). Although all potential functions are identified, the subscale(s) with the highest total rating(s) are considered to be the primary function(s). The QABF consists of excellent inter-rater coefficients for the five functions, ranging from .96-.98, and contains high test-retest reliability.

This instrument has been found to greatly aid with the development of hypotheses on the function of aberrant behaviours, leading to an increase in the application of appropriate, effective treatments (Paclawskyj, Matson, Rush, Smalls, & Vollmer, 2000; Singh et al., 2006). In this study, the QABF was adapted to include five additional items to assess the function of escape from anxiety (March & Mulle, 1998) for the children's targeted OCBs, based upon the DSM-IV-TR (APA, 2000) criteria for OCD. See Appendix C for a copy of the adapted version of the QABF. Examples of items added to this instrument include "Does the child appear worried (e.g., facial expressions, body tightening) before engaging in the behaviour?" and "Does the person seem to engage in the behaviour to get rid of uncomfortable thoughts/images/ impulses?"

Antecedent-Behaviour-Consequence (ABC) data (Cooper et al., 2007). ABC data involves an observer recording a descriptive sequenced account of the target behavior(s) under investigation, and identifying antecedent/consequences associated with the target behavior(s). An ABC checklist (O'Neill, Horner, Albin, Storey, & Sprague, 1996) was utilized in this study which consisted of the following antecedents: positive attention, negative attention, demand/request, denial/removal/waiting, transition, and engagement in an activity, as well as the following consequences: positive attention, negative attention, access to tangible/activity, sensory stimulation, avoidance/escape and escape from anxiety. This last consequence was operationally defined for the ABC probe data as any marked visual reductions in a child's anxiety, measured by changes in their facial expressions, body language, and/or tone of voice after displaying an OCB (e.g.,

relaxed body posture, discontinuation of screaming/crying, smiling face, etc.). See Appendix D for a copy of the ABC checklist form. In this study, the ABC probe data consisted of watching video and listening to voice recordings of the children at home during times/situations in which they typically engaged in their targeted OCBs.

Parent report of child's OCBs. Information obtained from the CY-BOCS (Goodman et al., 1986) along with parental assistance, aided in creating operational definitions of the children's OCBs, as well as parental data collection forms containing questions on a child's OCBs. See Appendix E and F for a copy of Michael and Edward's parental data collection forms. Parents were asked to answer yes/no and 5-point anchored Likert scale questions. All Likert anchors were based upon pre-treatment parental descriptions of what an OCB consisted of, or its average frequency of occurrence per day. Likert scale items ranged from 1 (*absence of an OCB*) to 5 (*an OCB occurred as it typically did or at its usual frequency at baseline*)

Secondary outcome measures.

Child Obsessive-Compulsive Impact Scale – Revised Parent Version (COIS-R). The COIS-R (Piacentini & Jaffer, 1998) is a structured questionnaire designed to assess the impact that a child's OCBs has on their psychosocial functioning, with higher scores indicating greater life impairments due to one's OCBs. This measurement tool is generally used as a pre-treatment prognostic indicator which is sensitive to treatment effects. The COIS-R contains 53-items organized into four subscales which generate a home, school, social, and total

OCD score. Items are coded using a Likert scale ranging from 0 (*just a little*) to 3 (*very much*) (Piacentini, Bergman, Melody, & McCracken, 2003). This instrument contains excellent internal reliability for the four subscales ranging from .88 to .94, as well as good construct validity and adequate concurrent validity (Piacentini, Bergman, Jacobs, & McCracken, 2003; Merlo, Storch, Murphy, Goodman, & Geffken, 2005). In the present study, the COIS-R and the Family Quality of Life Questionnaire (see below) were used as pre and post-test measures.

The Family Quality of Life Questionnaire. The Family Quality of Life Questionnaire (Feldman, Condillac, Tough, Hunt, & Griffiths, 2002) is a simple and time-efficient measure answered by a child's caregiver. This eight item instrument rates the extent that a child's problem behaviours (e.g., OCBs) interfere with their quality of life and daily functioning. Items on this assessment tool cover such areas as daily activities/routines, community integration, participant's peer relationships, learning, family stress, family social functioning inside and outside of the home, and positive response by others towards the child. A Likert scale is used ranging from 0 (*minimally*) to 7 (*extremely*), with higher scores indicating that OCD causes much disruption to a child/family's quality of life and daily functioning.

Consumer satisfaction questionnaire. The Consumer Satisfaction Questionnaire (Feldman et al., 2002) involves a parent rating how satisfied they are with the CBT intervention their child received. This brief self-report consists of four items assessing how one feels about the overall CBT intervention, how

satisfied they are with the service, how effective they feel the service is, and if they believe that their child developed appropriate strategies for coping with their OCD. The Consumer Satisfaction Questionnaire utilizes a 7-point Likert scale ranging between 1 (*not at all satisfied*) to 7 (*very satisfied*). In the present study, this assessment was used as a post measure.

Research Design

A multiple baseline design across participants' OCBs was utilized in this study (Cooper et al., 2007). When stable baselines were established for each child's targeted behaviours, the independent variable (the two-phase function-based CBT protocol) was applied. The first phase of treatment, the cognitive training (CT) phase, consisted of treating a child's OCBs collectively as is recommended by existing CBT manuals aimed at reducing OCD in children (March & Mulle, 1998). This was followed by phase 2 of treatment which consisted of a behaviour skills training (BST), ERP, and the FBA/I component. Since ERP has repeatedly been found to be the active ingredient in CBT that reduces OCBs (e.g., McLean et al., 2001; Stekette, 1993) and because it is typically utilized once a child receives CT (March & Mulle, 1998), it was decided that this component of treatment would be incorporated into phase 2.

Due to this, the BST component of treatment was implemented at the onset of this phase so that the children were equipped with the coping tools needed to successfully carry out their ERP homework assignments. Since it is possible that an OCB may be maintained by function(s) other than escape from anxiety, a FBA/I component was incorporated into this CBT protocol so that

potential functions could be addressed in the individualized treatment plan. When a treatment effect was evident for the first treated OCB (in the second phase of treatment), the next targeted behaviour received its individualized intervention. This process continued until all targeted behaviours were treated. This research design did not enable us to tease apart which component(s) of phase 2 had treatment effects on the children's OCBs as they were presented concurrently.

Procedure

Pre-treatment meeting and assessments. This investigation received ethical clearance from the Brock University Research Ethics Board (See Appendix G and H for copies of the consent and assent forms). Due to the children's age and ASD diagnosis, the therapists used simple language when discussing the confidentiality/purpose of the study, as well as what participation consisted of. This was followed by an independent investigator administering the cognitive and OCD assessments to the parent and child.

Baseline data collection and home visits. During the first of four home visits, the therapists conducted a brief reinforcement assessment with one of the child's parents. This consisted of asking the parent what their child's favourite foods/beverages, toys, activities, and forms of social praise were. See Appendix I for a copy of the reinforcement assessment used. Although the children did not partake in this reinforcement assessment, they were responsible for choosing which tangible/activity reinforcers they wanted throughout treatment for participation/ compliance with the CBT protocol. Initially, parents were instructed on how to use the video/voice recorders, collect the probe data, and fill out their

parental data report forms. The remaining home visits consisted of making necessary changes to the data collection methods (e.g., altering operational definitions or necessary parent report items), answering any questions, and ensuring that the probe and parent report data were collected appropriately. During baseline, parents were instructed to record probe data/complete the parent report forms 3 days a week. It was emphasized that the data should be collected on different days than the previous week. To ensure this occurred, the parents were provided with a weekly data collection schedule form. When treatment commenced, the parents were requested to collect this data in the same manner for 5 days each week.

Multimodal treatment package. The multimodal treatment package consisted of a manual and accompanied children's workbook, *I Believe in Me, Not OCB* (Vause et al., in progress). Enhancements were made to the treatment protocol to address the cognitive, social, and linguistic challenges associated with the children's HFA diagnosis. A protracted cognitive component consisted of a simplified version of cultivating non-attachment (e.g., externalizing OCD), positive self-talk, and psychoeducation to assist the children in becoming aware of their obsessions and compulsions. Second, to extend upon the March and Mulle (1998) manual, a function-based assessment/ intervention component was incorporated into treatment. To explore functions other than escape from anxiety for the children's OCBs, FBAs were conducted for each of the targeted behaviours.

The information derived from FBA assessments provided the researchers with a better understanding of the antecedents and consequences possibly maintaining the targeted behaviours and enabled them to create function-based interventions consisting of extinction and a schedule of differential reinforcement that were incorporated into individualized treatment plans. Third, behavior skills training (BST) which consisted of teaching the children behavioural strategies such as diaphragmatic breathing, progressive muscular relaxation (PMR), guided imagery, counting from one to ten, talking about topics of interest with family members, and self-talk statements specific to an OCB (e.g., “bug off OCD, I know how to put my bicycle helmet on” were taught to the children to complement the cognitive tools previously learned and provide them with replacement behaviours for their compulsions.

Finally, a graded ERP component, modeled after March and Mulle (1998), was included in the multimodal treatment protocol and consisted of exposing the children to anxious thoughts associated with their OCBs (if such thoughts were known) and gradually or immediately preventing them from engaging in their compulsions. Given Edward’s noncompliance displayed in the initial sessions, a compliance enhancement (CE) component adapted from Ducharme and Popynick’s (1993) errorless compliance training was included in his treatment plan to increase the likelihood that he would comply with session discussions/activities and carry out therapeutic homework assignments. Edward’s mother was presented with a list of daily requests that she made of her son and was asked to rate if they were easy, moderate, or difficult for Edward to follow

through with. This in conjunction with observations made in session enabled the researchers to identify requests that Edward typically followed through with in session and at home. The therapists began with increasing Edward's compliance with easy requests in session and at home using reinforcement in the form of verbal praise, as well as tokens in session and small tangible/activities at home (e.g., choosing a special dessert after lunch) When he demonstrated an ability to follow through with easy requests in both environments, his first OCB was treated. This CE component continued throughout treatment as more moderate and difficult demands were faded in weekly.

Treatment enhancements for children with HFA. See Table 3 for a list of the treatment enhancements included in this study. Michael and Edward's mothers were responsible for attending sessions to assist their child with session activities/discussions, complete the parentreport forms/collect the probe data, and carry out the FBIs. By being therapeutically progressive, they were able to motivate and empower their child to openly discuss their OCBs, complete session activities, and follow through with their ERP homework assignments. Second, the children's workbook containing many visuals, allowed the children the option of learning through different modalities. The visual material proved to be a great resource as it not only assisted the children with understanding the various concepts and their own OCBs, but was a great reference tool. Third, weekly schedules located in the children's workbook (and on a whiteboard at the front of the therapy room) also proved to be a helpful treatment enhancement.

Table 3

List of Treatment Enhancements

Treatment Enhancements	
High parental involvement	Parents attended all sessions, assisted their child with session activities/therapeutic homework, carried out FBIs, and collected probe data/filled out parent reports.
Strong emphasis on visuals	The children's workbook contained visuals of all CBT/OCD concepts and activities
Use of schedules for predictability in session/with homework assignments	Weekly session schedules were presented in the workbook and on a whiteboard located at the front of the therapy room.
Session rules	Session rules were discussed/reviewed weekly and emphasized participation in group discussion, completion of session activities, and demonstrations of compliant behavior.
Choice making	Treatment choices in the therapeutic/home environment consisted of: deciding to write/draw session activities, choosing how to carry out ERP homework assignments, selecting which CT and/or BST tools to incorporate into treatment plans, and deciding on what type of reinforcers to receive for participation and compliance.
In session token system	Each child earned a wrapped prize at the end of each session if they could collect ten stickers for following session rules.
Reinforcers delivered in session/at home	The children were provided with daily rewards for completing CBT homework assignments, as well as delayed reinforcers for completing more long-term OC specific goals.
Incorporation of participant's interests	The children's interests were incorporated into treatment to keep them engaged in the therapeutic process (e.g., all mystery prizes, token stickers, and session activities/games included things with which the children enjoyed doing/playing).

At the beginning of each session, a therapist reviewed the order of CBT activities scheduled for that session. The use of the weekly schedules not only allowed the children to anticipate the order of session events, but also cope more readily with necessary alterations that had to be made. During the few sessions in which the schedule had to be slightly altered, Edward and Michael were observed to independently replicate these changes to their workbook. Michael and Edward

appeared to also benefit from being provided with choices throughout treatment as it enabled them to be in control of the therapeutic process and assisted with reducing any unnecessary stress they may have encountered. For example, both children experienced fine motor challenges/difficulty with spelling words and therefore often opted to draw their session activities.

Fourth, while Edward was motivated to follow session rules to get his end of session prize, Michael appeared to enjoy verbal praise paired with the stickers. At times, he had to be reminded to choose a prize and was often observed leaving session with his reward unwrapped. The parents also provided daily rewards for completing ERP homework assignments (e.g., staying up an extra half hour later than usual). As with the in-session prizes, Michael appeared motivated by receiving social praise from his mother and the therapists. Further, he appeared internally motivated to overcome OCD as he was socially conscious of how his OCBs looked to other children and he displayed a strong urge to please others, especially his mother. In contrast, Edward did not appear interested in doing his ERP homework assignments and but appeared externally motivated to complete them.

Phase 1: Treating each child's OCBs collectively using CT and the children's experiences with this phase. Phase 1 of treatment, the CT phase, took place over two sessions and consisted of treating the children's OCBs collectively. The tools learned in this phase were utilized throughout treatment. The purpose of this phase was to equip the children with knowledge about what OCD is as well as learn to acknowledge the occurrences of their obsessions and

compulsions. Additionally, they were taught that OCD is not their fault and it is something separate from them. To reinforce this, the children were asked to create externalizing statements that they could use at home to separate OCD from themselves (e.g., “buzz off OCD”). See Table 4 for a description of the CBT tools used in phase 1 one of treatment.

While providing psychoeducation on OCD, Edward was often inattentive as he would turn his head away from discussions to look out the window, play with items in his hands, and ignore questions. This likely contributed to his difficulty discussing and answering questions. In contrast, Michael actively answered psychoeducation questions correctly throughout treatment (e.g., “Is OCD your fault?”) and was able to relate and apply this information to his own OCBs. During phase 1, the children used a fear thermometer to rate the amount of anxiety they experienced (or would experience) if they were prevented from performing their OCBs. To increase the validity of the children’s anxiety ratings, they were first asked to rate how much fear and worry they would experience if they had to do various things (e.g., play with a friend or swim in open waters with a shark). With practice, Edward was able to do this CT activity accurately, while Michael needed assistance from his mother.

The fear thermometer activity assisted the children with mapping OCD as it guided where they placed their OCBs in of the three map zones (the OCD, the OCD/me, or the me zone). Michael was able to learn how to move his OCBs throughout the three zones and appeared proud of relocating an OCB out of the OCD zone to the OCD /me or me zone as he often showed the therapists his map

Table 4

Description of Phase 1

Phase 1: CT (Session 1-2)	
Psychoeducation on OCD	OCD was described as a challenge (e.g., asthma) and a story was read about how OCD sends the brain incorrect messages. Obsessions/compulsions were also described using simple language.
Giving OCD a Nickname	The children created nasty nicknames for OCD (e.g., germy) to assist with externalize it as something separate from themselves.
Choosing a support team	The children were asked to choose who they would like to support them throughout treatment (e.g., family members, therapists, friends, teachers, etc.).
Writing/drawing/discussing OCBs	The children were asked to write or draw their OCBs and share/discuss them with the group.
Rating OCBs on fear thermometer	The anxiety associated with each OCB was rated using a visual of a thermometer containing a Likert type scale, ranging from 1 (<i>minimal anxiety</i>) to 5 (<i>extreme anxiety</i>).
Mapping OCBs	The children decided which OCBs were controlled by themselves and OCD. A paper containing three sections: a me, me/OCD, and OCD zone was presented and the children were asked to place their OCBs into the corresponding zones.
Learning how OCBs hindered one's own/family members quality of life	Using a worksheet, the children drew things they enjoyed doing. Blocks representing OCBs were then placed on the drawing to provide a visual of how much room OCD was taking up in their lives. The children were then asked to draw two circles, demonstrating how much OCD currently interfered with these activities, and how much they thought OCD would interfere with these activities at the end of treatment.
Creating externalizing statements	The children created simple sentences that they could say/think to manifest OCD as something separate from themselves (e.g., "buzz off OCD!", "You're not the boss!", etc.).

after doing this activity. Throughout this phase, Michael was able to come up with multiple examples of externalizing statements, enjoyed practicing and sharing them in session, and used this cognitive tool at home. Edward had difficulty understanding the differences between the three zones as he often asked his

mother for help with mapping his OCBs and occasionally walked away from the table when asked to complete this activity. It appeared that this CT tool did not benefit Edward and it was discontinued for him in phase 2 of treatment during session 5. Although Edward was also able to create a couple of externalizing statements, he would only use them when prompted in session and was never observed to utilize them at home during phase 1.

Phase 2: Toolkit for treating individual OCBs using CT, BST, ERP, and FBAs/Is. In this phase of treatment, the children were taught an additional cognitive coping tool referred to as coping statements. Coping statements consist of rationale and positive affirmations that one can say or think to get rid of anxious thoughts associated with an OCB. For example, Michael worried that he or his mother would get hurt in a thunderstorm; he created the coping statement “thunderstorms are good, they help the flowers grow”. Additionally, psychoeducation was applied in phase 2 to some of the children’s targeted OCBs to further assist them in adopting a more realistic perspective (e.g., Edward and Michael exhibited contamination worries and were taught that germs can help one develop strong, healthy bodies). The BST component was introduced at the onset of phase 2 to provide the children with behavioural coping tools (e.g., diaphragmatic breathing) that complemented the cognitive tools previously taught and provide them with replacement behaviours for their compulsions.

While traditional CBT components (CT and ERP) were aimed at addressing the OCBs’ hypothesized function of escape from anxiety, the FBAs identified additional possible functions maintaining the target behaviours. In this

study, any function identified on either the QABF or ABC probe data (with a frequency greater than zero) was considered to be a hypothesized function and was addressed using extinction and differential reinforcement. Differential reinforcement is a procedure in which a behaviour is followed by a reinforcer, while other behaviours are not, resulting in increases in a behaviour and decreases in other undesirable behaviours. In the present study, differential reinforcement of alternative behaviour (DRA), low rates of responding (DRL), and other behaviour (DRO) was utilized. DRA consists of reinforcing a functionally equivalent alternative behaviour to replace a problem behaviour, while DRL involves reinforcing lower rates of a behaviour to decrease its rate, and DRO consists of delivering reinforcement after intervals of time in which a problem behaviour does not occur (Cooper et al., 2007). See Tables 5 and 6 for a description of CBT elements incorporated into Michael's individualized OCB treatment plans and results and descriptions of his FBA/Is. Tables 7 and 8 provide the same information pertaining to Edward's OCBs and noncompliant behavior. Note that all hypothesized functions displayed in the children's FBA/I tables are presented in rank order (based upon QABF and ABC probe data frequency scores), beginning with the primary function.

Results of Michael's FBAs. Both the QABF and ABC probe data distinguished the function of escape from anxiety for the majority of Michael's OCBs, while Michael's mother tended to identify nonsocial and escape functions, and the ABC probe data distinguished access to tangibles and attention functions. Two of Michael's OCBs, bicycle helmet checking and

Table 5

Michael's Individualized OCB CBT Treatment Plans

Phase 2: CT(see phase 1 description)+ BST+ERP+ FBA/I			
OCB	CT	BST	ERP
Goodnight Statement	Discussed hindrance of own/family members' quality of life	Diaphragmatic breathing	First three nights said goodnight, whispered rest of statement. Throughout the rest of treatment, said goodnight.
Blocking Coughs	Psychoeducation, discussed hindrance of own/family's quality of life coping statement	PMR, talked about topics of interest	When brother coughed, told not to use arm and/or hand to block it.
Checking Bicycle Helmet	Psychoeducation, discussed hindrance of own/family members' quality of life, externalizing statement, coping statement		Didn't get mother to check helmet.
Germ Reassurance	Psychoeducation, discussed hindrance of own/family members' quality of life, coping statement	PMR, talked about topics of interest	Didn't ask mother if he caught germs/would get sick.
Weather Reassurance	Psychoeducation, discussed hindrance of own/family members' quality of life, externalizing statement, coping statement	Talked about topics of interest, guided imagery	Didn't ask mother questions about being safe during thunderstorms or when they would begin/end.
Whiteboard Ritual	Psychoeducation, coping statement	PMR	First three nights crossed a new line off whiteboard. After this, moved whiteboard one foot from bed each night until it's out of bedroom.
Reassurance About Doing a Good Job/Things Known	Discussed hindrance of own/family members' quality of life, externalizing statement	Diaphragmatic breathing, PMR, guided imagery	For allotted time, was told not to ask mother for reassurance about doing a good job/questions to things known

Table 6

Michael's OCB FBAs/Is

OCB	Identified QABF and ABC Functions	FBI
Goodnight Statement	Escape from anxiety, attention, tangible, nonsocial	Began with Ext+DRL: Withheld attention/tangibles if Michael said goodnight statement. Verbal praise contingent upon occurrence of saying goodnight and whispering rest of statement. Moved to Ext+DRA: Verbal praise contingent upon occurrence of just saying goodnight
Blocking Coughs	Escape from anxiety, attention, tangible, escape	Ext+DRA Withheld attention/tangibles if Michael blocked a cough. Verbal praise contingent upon staying at the table and continuing to eat meal or engaging in conversation that didn't involve blocking coughs in the presence of brother coughing during mealtime.
Bicycle Helmet Checking	Escape from anxiety	Ext+DRA Withheld attention if Michael asked for helmet to be checked. Verbal praise contingent upon talking about things other than checking bicycle helmet or riding bike without asking to have helmet checked.
Germ Reassurance	Escape from anxiety, attention	Ext+DRA Withheld attention if Michael asked germ questions. Verbal praise contingent upon continuing to eat meal or engaging in conversation not about germs/getting sick in the presence someone who was sick during mealtime.
Weather Reassurance	Escape from anxiety, attention nonsocial	Ext+DRA Withheld attention if Michael asked weather questions. Verbal praise contingent upon talking about things other than the weather in the presence of a storm/forecasted storm.
Whiteboard Ritual	Escape from anxiety, attention tangible	Began with Ext+DRL Withheld attention/ tangibles when Michael wrote on whiteboard. Verbal praise contingent upon writing one less line on whiteboard each night and then moving it one foot further from bed each night until it was out of bedroom. Moved to Ext+DRA Verbal praise contingent upon doing things other than writing on whiteboard before bed (e.g., reading or talking with mom).
Reassurance About Doing a Good Job/Things Known	Escape from anxiety, nonsocial	Ext+DRO Withheld attention if Michael asked if he was doing a good job/questions about things known. Verbal praise contingent upon not asking these types of reassurance questions within an allotted amount of time.

Note. Amount of ABC probe data collected for Michael's OCBs ranged from 6 to 31 probes ($M = 18$). Ext = extinction.

Table 7

Edward's Individualized OCB Treatment Plans

Phase 2:CT(see phase 1 description)+BST+ERP+FBAs/Is+CE			
OCB	CT	BST	ERP
Requests to Remove Crumbs/Running from Table	Reviewed support team, externalizing statement	PRM, counting from 1-10	<p>Session 4: Sat at table until timer went off and asked mother to move crumbs to other area of table (began with moving crumbs to other end of the table and moving them a little closer each dinner.</p> <p>Session 5-12: Used napkin to move crumbs to other area of table (started with moving crumbs to other end of table, ended with leaving crumbs where they lay) and didn't run from table.</p>
Bedtime Ritual	Externalizing statement		<p>Session 7: Chose to have right or left foot scratched first. Plan unsuccessful after 3 days, dad told to change scratching ritual each night (e.g., tap right foot before proceeding with ritual).</p> <p>Session 8-12: Chose who would scratch feet (4/7 days can't choose father), and how they would be scratched (4/7 days have feet scratched in order different than ritual).</p>
Requests to Remove Hair and Fluff/Running from Bathroom	Externalizing statement		Used paper towels to remove hair/fluff from sink to throw it into garbage.

reassurance about doing a good job/things known, did not become treatment goals

until sessions 3 and 4, resulting in ABC probe data not being collected on them.

Along with the hypothesized functions identified on the QABF for these two

OCBs, attention was also addressed in these two OCBs' FBI as Michael only

asked his mother bicycle helmet questions and reassurance about doing a

good/things known (when not at school).

Table 8

Edward's Noncompliance and OCB FBAs/Is

Noncompliance/ OCB	Identified QABF and ABC Functions	FBI
Noncompliance	Escape Physical discomfort Tangibles	Ext+DRL Withheld tangibles when Edward did not follow through with requests. Verbal praise and tangible/activity reinforcers contingent upon reaching daily compliance goals (began with Edward following through with three easy demands a day and finished with him following through with three difficult demands a day).
Requests to Remove Crumbs/ Running from Table	Escape from anxiety Attention Escape Nonsocial Physical discomfort	Ext+DRA Withheld attention if Edward asked for crumbs to be removed or if he ran from table. Verbal praise and tangible and activity reinforcers contingent upon Edward staying at the table to eat and (depending on what week of treatment this OCB was in) asking mother to move crumbs to different location on table, moving them independently to another location of the table, or sitting at the table and eating with the crumbs present where they lie.
Bedtime Ritual	Escape Attention Escape from anxiety Tangible Physical discomfort	Ext+DRA Withheld attention and tangibles if bedtime ritual occurred. Verbal praise, and tangible and activity reinforcers contingent upon Edward choosing someone other than father to scratch feet (4/7 days a week) and choosing different foot scratching order (4/7 days a week).
Requests to Remove Hair and Fluff/Running from Bathroom	Escape from anxiety Attention Escape Tangible Nonsocial	Ext+DRA Withheld attention and tangibles if Edward asked for hair/fluff to be removed/ran from bathroom. Verbal praise, and tangible and activity reinforcers contingent upon staying in the bathroom when brushing teeth and using paper towels to clean hair out of bathroom sink.

Note. Amount of ABC probe data collected for Edward's noncompliance and OCBs ranged from 8 to 11 probes ($M = 10$). Ext = extinction.

Results of Edward's FBAs. Edward's mother identified four to six functions for his OCBs and noncompliant behaviours. The indirect and direct FBAs both distinguish the potential function of escape from anxiety for Edward's

OCBs, while Edward's mother tended to identify the nonsocial function for these behaviours, and the ABC probe data identified attention.

Group discussion, activities and games utilized to increase the children's social skills. Since children with HFA display a variety of social challenges, the therapists capitalized on the group format of treatment by having the children engage in many group discussions/activities situated around therapeutic concepts, their OCBs, and learning and practicing coping tools. Additionally, the therapists embedded one or two games into each session which required Michael and Edward to ask one another questions/listen to the other without interrupting, talk about topics of interest to the other child, and work together to solve puzzles and build structures. Approximately 10-minutes of each session were devoted to children games, and they were encouraged to socialize with one another on breaks.

Results

Procedural and Interobserver Reliability

Procedural reliability (POR) is the extent that a treatment is implemented as planned (Cooper et al., 2007). Treatment integrity checklists were created for all treatment sessions and selected home ERP probes to assess if the CBT protocol was carried out as planned in both environments. See Appendix K and L for examples of the session and FBI treatment integrity checklists. A researcher watched videos of all treatment sessions and recorded the occurrence/non-occurrence of the primary components of treatment, with POR checks indicating 100% accuracy. Similarly, a researcher watched or listened to the video or voice

recorded probes of the children's OCB home exposures and recorded if the parents followed the FBI instructions they were provided with for the target behaviours. Video and voice recorded probes were included in this analysis if there was an opportunity to observe or hear the FBI antecedent and consequence instructions, while video and voice recordings which did not capture the opportunity to observe or hear the FBI antecedent and/or consequence instructions were excluded from this analysis. Based upon this criteria, three of Michael's video recordings were excluded from this analysis and five of Edwards were. POR checks for the FBI instructions provided to Michael's mother indicated accuracy on 75 of the 80 probes (94%), while POR checks for the FBI instructions given to Edward's mother indicated accuracy on 34 of the 39 probes (87%).

Overall, the parents did an excellent job of consistently implementing the FBIs in the home, however, there were occasions where the mothers provided attention to their child when they displayed an OCB (e.g., Michael's mother sometimes answered her son's thunderstorm questions). Although probe data was not obtained for Michael asking his mother reassurance about doing a good job/things known, his mother reported that she was unable to implement this OCB's ERP homework assignment consistently due to family matters. POR was not conducted for the coping tools that the children used during ERP homework assignments as utilizing these tools was optional and it may not have been possible to observe or hear Michael and Edward use some of them (e.g., the children may have chosen to think of a coping statement rather than say it).

Interobserver reliability (IOR) is the consistency amongst two or more researchers who independently observe and record data on an individual's behaviour(s) (Leary, 2004). In this study, an independent researcher watched or listened to 30% of Michael and 32% of Edward's video or voice recorded probes and recorded if the parents utilized the FBI instructions they were provided with using the FBI treatment checklists. IOR for the FBI instructions given to Michael's mother indicated high agreement ($M = 95\%$), as did the FBI instructions provided to Edward's mother ($M = 91\%$).

IOR was also conducted on identifying perceived functions for OCBs. Video and voice recorded probes were included in this analysis if there was an opportunity to observe or hear antecedent events and consequences of a target behaviour, while video and voice recorded probes which did not provide the opportunity to observe or hear antecedent events and/or consequences of an OCB were excluded. Based upon this criteria, one of Michael and three of Edward's probe recordings were excluded from this analysis. A researcher watched or listened to the children's video or voice recorded probes to assess hypothesized functions maintaining the targeted behaviours using the ABC checklist (O'Neill et al., 1996) previously discussed. This was followed by an independent researcher watching or listening to 28% of Michael and 32% of Edward's video or voice recorded probes and assessing the potential functions maintaining the target behaviours using the ABC checklist. IOR for Michael's FBAs indicated high agreement ($M = 87\%$), as did Edwards ($M = 89\%$). Last, IOR was collected for the occurrence/ nonoccurrence of the children's OCBs by a researcher who

watched or listened to the video or voice recorded probe data and recorded if an OCB occurred/did not occur with all video and voice recorded probes being included in this analysis. An independent researcher then watched or listened to 28% of Michael and 32% of Edward's video or voice recorded probes and assessed if an OCB occurred or did not occur. IOR for the occurrence/nonoccurrence of Michael's OCBs demonstrated high agreement ($M = 97\%$), as so did Edwards ($M = 100\%$).

Assessment of Standardized and Secondary Outcome Measures, Parent Reports, and Probe Data

The standardized and secondary outcome measures were compared at pre- and post-treatment as well as follow-up for M and the parent forms and probe data were analyzed using visual inspection. This type of analysis is the traditional approach used to assess single subject research and involves examining the variability, level, and trend of the data within/across the different phases of treatment to determine if a functional relationship exists between the independent variable (the function-based CBT protocol) and the dependent variable (changes in the children's OCBs) (Cooper et al., 2007). Each child's parent report and probe data was plotted in separate graphs with the X axis representing days of the week. The Y axis of the parent report graphs was presented on a scale ranging from 1 (*a target OCB compulsion did not occur*) to 5 (*a target OCB compulsion did occur at its typical daily frequency or higher*), while the Y axis of the probe data graphs had scales ranging from 0 (*a target OCB compulsion did not occur*) to 1 (*a target OCB compulsion did occur*). For Michael's weather reassurance probe

data graph, partial interval recording was also displayed on a secondary Y axis ranging from 0% (*Michael did not ask for weather reassurance*) to 100% (*Michael did ask for weather reassurance within all 30 second intervals analyzed*). These data were collected using voice recorded probes for Michael's weather reassurance as he asked his mother numerous questions about the occurrence of a thunderstorm and being safe within an allotted amount of time.

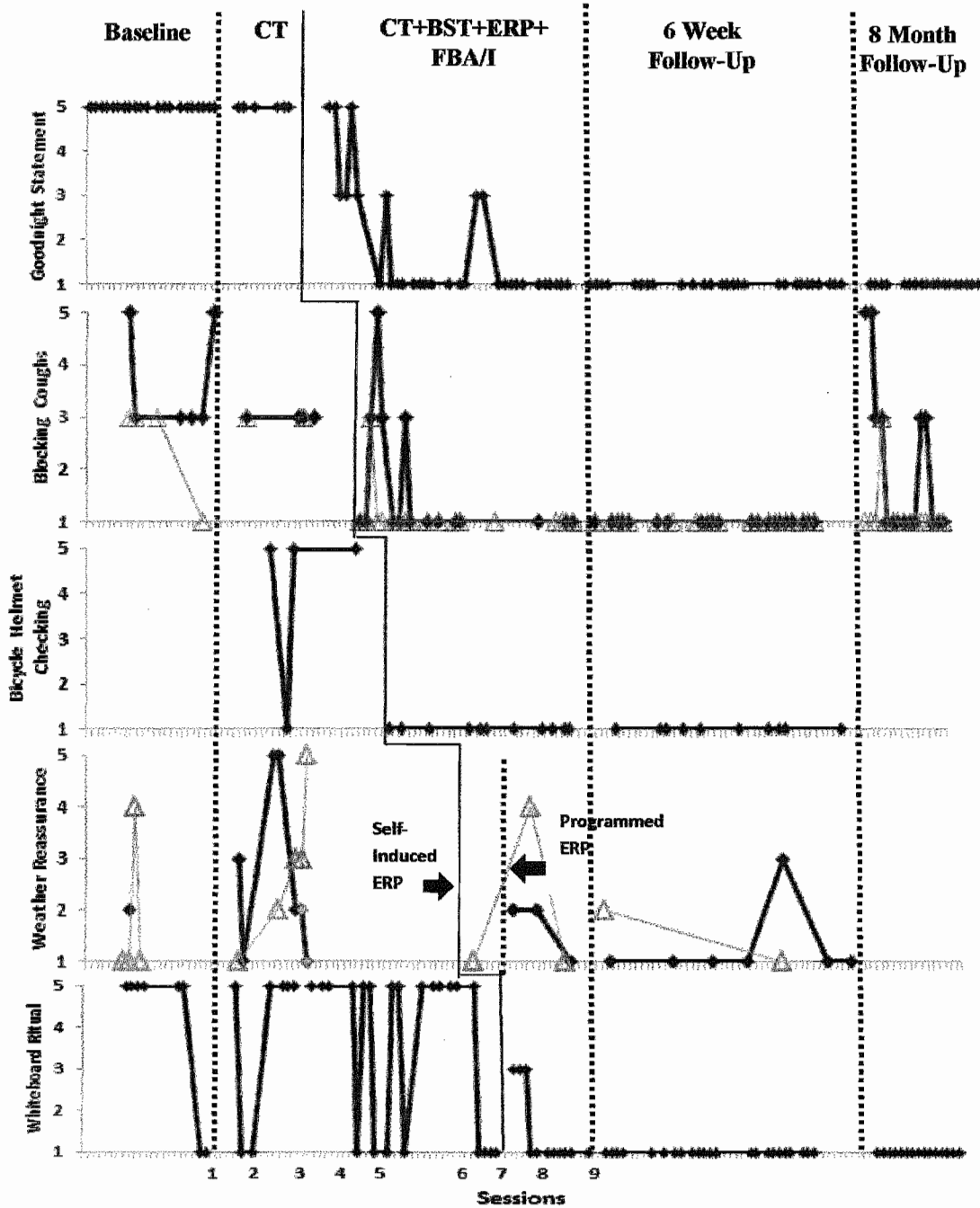
Visual Inspection of Michael's Parent Report and Probe Data

Seven of Michael's OCBs were treated throughout the course of this study. Five of these behaviours were included in his multiple baseline design using parent reports (see Figure 1) and four were included in his multiple baseline design using probe data (see Figure 2). Michael's parent report and probe data graphs mirrored one another as they displayed similar levels, trends, and variability in the OCBs across baseline, the two phases of treatment, and follow-up. During phase 1, the CT phase, a treatment effect was not evident for any of Michael's OCBs. When a behaviour received its individualized treatment plan in phase 2, the parent report and probe data demonstrated decreases in its occurrence to clinically significant lower or zero frequency levels.

Michael's experiences with the CBT components in phase 2. In phase 2, Michael independently created coping and additional externalizing statements, which he was always eager to practice and chose which CT tools to incorporate into his individualized treatment plans. Regarding psychoeducation (for his bicycle helmet checking and two weather related OCBs) in phase 2, Michael comprehended the information presented which included: teaching him to

Figure 1

Multiple baseline across Michael's treated OCBs using parent report data

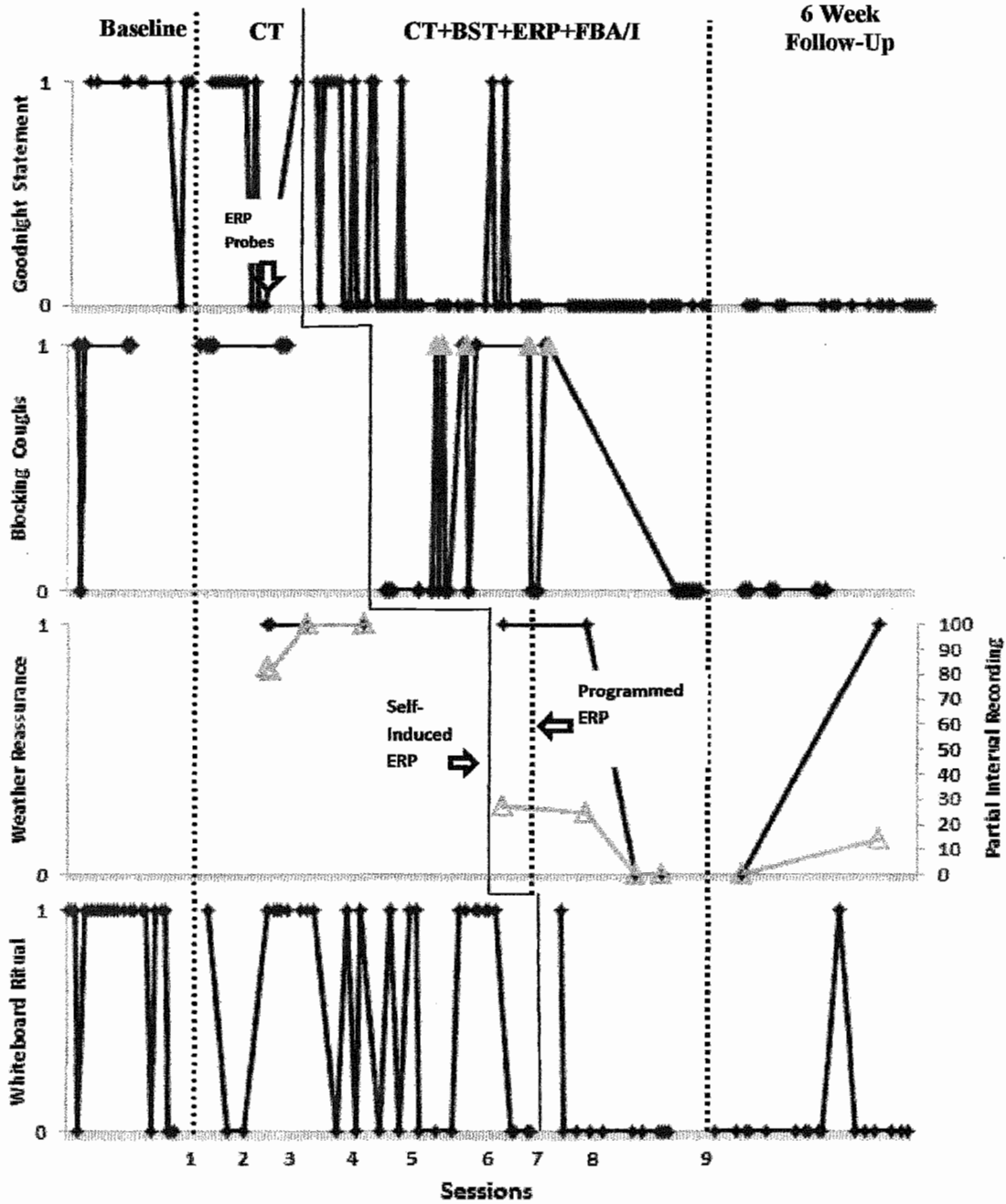


Graph 2: Black diamonds = Michael blocking his brother's coughs during breakfast; Triangles outlined in grey = Michael blocking brother's coughs during dinner.

Graph 4: Black diamonds = Michael asking for weather reassurance during the day; Triangles outlined in grey = Michael asking for weather reassurance during the evening and nighttime; Light grey data points = days where it rained only.

Figure 2

Multiple baseline across Michael's treated OCBs using video and voice recorded data



Graph 2: Grey diamonds = Michael raising his elbow or placing a hand to his cheek.

Graph 3: Black squares = per opportunity data of Michael asking for weather reassurance; diamonds outlined in grey = partial interval recording of Michael asking for weather reassurance.

independently check if his bicycle helmet was on securely, rationalizing that thunderstorms would occur regardless of writing the temperature/weather statements on his whiteboard, and describing ways that Michael could tell he would be safe during a thunderstorm. Additionally, Michael and his mother were asked questions about how these OCBs interfered with their daily lives. This appeared to benefit Michael as he got to hear from his mother how his OCBs impacted her. When attempting to rationalize Michael's fears associated with contamination, he had a difficult time understanding the material presented due to the use of unfamiliar words (e.g., immune systems) and information that contradicted things previously learned (e.g., germs can help make you healthy and strong). Through the use of simple language and elaborating on material presented, Michael comprehended this information as was demonstrated by his ability to converse on this topic.

As was the case with the cognitive tools, Michael was enthusiastic about learning and practicing the behavioural tools taught (e.g., PMR) and would often ask if he could demonstrate them in front of the group. He creatively personalized diaphragmatic breathing and PMR by slightly altering them or by incorporating his interests, and he chose which behavioural tools to incorporate into his individualized treatment plans. At home, Michael was able to carry out the majority of his ERP homework assignments with assistance from his mother who typically prompted him to do his ERP tasks and use his tools if he exhibited observable signs of anxiety. As treatment progressed, Michael was observed to more frequently utilize his coping tools independently.

Individualized treatment plans for Michael's OCBs. The researchers were unsure if Michael's first treated behaviour, goodnight statement, was an OCB as the thoughts associated with it were unknown. During the CT phase of treatment, an ERP probe was conducted in which Michael was asked to just say goodnight for one evening. While he was able to do this, he displayed visual signs of anxiety (talking to himself in an inaudible whisper and a worried face). This behaviour decreased to zero levels two weeks after receiving its individualized treatment plan, although there was an occurrence after this time period in which Michael wanted to say his goodnight statement. This occurred during the evening of a thunderstorm and his mother redirected him to use his coping tools. He utilized those assigned to this OCB's individualized treatment plan such as diaphragmatic breathing, PMR, and an externalizing statement.

Challenges arose when Michael's second target behaviour, blocking coughs, received its individualized treatment plan in phase 2. During baseline, the average frequency rating of this OCB was 3.40 during breakfast and 2.70 during dinner. Although it decreased during its first week in phase two (average frequency rating during breakfast was 1.90 and 1.16 during dinner), the probe data demonstrated that Michael began to substitute his blocking with quickly extending his elbow to the side, turning his head in the opposite direction of a cough, and/or placing a hand to his cheek. Further treatment was provided for Michael blocking coughs (e.g., role playing the ERP homework assignment), PMR was integrated into this OCB's treatment plan for him to use during mealtime, and Michael's mother was instructed to place her son's coping

statement (“it’s okay, some germs are good”) somewhere where he could read it during all meals. Through using the assigned coping tools for this OCB, Michael was able to decrease its occurrence to zero levels. One week prior to the collection of the parent report 8-month follow-up data, Michael began to block his brother’s coughs. This was triggered by his brother needing brief hospitalization due to a stomach flu and 103F degree fever. His mother reported that he had not been blocking coughs since treatment and that he was sometimes independently utilizing PMR and diaphragmatic breathing (a coping tool not originally assigned to this OCB’s individualized treatment plan) independently when his brother coughed. Michael’s bicycle helmet checking was an OCB that decreased immediately once its individualized treatment plan was implemented in phase 2, and it was reported and observed that he did not use any coping tools when he prevented himself from doing this OCB.

During the sixth week of treatment, Michael partook in self-induced ERP for his weather reassurance while driving in a car when a thunderstorm occurred. He prevented himself from asking his mother questions about being safe or when the storm would end by independently using a variety of coping tools which included: diaphragmatic breathing, PMR, counting from one to ten, and an externalizing or coping statement (“buzz off OCD. Thunderstorms are good. They help the flowers grow”). When this OCB’s individualized treatment plan was implemented, Michael was observed to always use coping tools not assigned to this OCB (PMR and diaphragmatic breathing), as well as occasionally coping

tools that were (externalizing or coping statements, guided imagery, and talking about topics of interest).

At the onset of baseline, data were obtained on the occurrence of rain and thunderstorms. These data in conjunction with the parent report and probe data collected on Michael's whiteboard ritual, demonstrated that he typically wrote the temperature and weather statements on his board during days that it rained or a thunderstorm occurred. When this OCB received its individualized treatment plan, Michael was able to successfully prevent himself from writing the temperature and weather statements on his board. However, when it came to moving his whiteboard one foot away from his bed each night, he was unable to do this activity. A therapist role played his ERP homework assignments and reviewed his chosen coping tools, which led to Michael successfully removing his whiteboard from his bedroom. He was observed to use coping tools assigned to this OCB, as well as diaphragmatic breathing, talking about topics of interest, and an externalizing statement.

Results of Michael's ADIS, CY-BOCS, and Secondary Outcome Measures

Michael's ADIS and CY-BOCS scores. At post-treatment, Michael still met the criteria for OCD according to the ADIS (Silverman & Albano, 1996). Although no new OCBs emerged, his mother reported that Michael continued to ask her questions about doing a good job and things he already knew about. As previously stated, this was an OCB that Michael's mother was unable to consistently implement ERP homework assignments for due to family matters. Michael received two booster sessions to address this OCB and at the 6-week

follow-up, he no longer met the criteria for OCD on the ADIS. During the 8-month follow-up, the ADIS indicated that Michael once again met the criteria for OCD. Michael's CY-BOCS (Goodman et al., 1986) total scores followed a similar trend. At pre-treatment, Michael obtained a CY-BOCS total score of 25 (severe OCD), which decreased at post-treatment (moderate OCD, score of 18) and the 6-week follow-up (subclinical, score of 0). At the 8-month follow-up, Michael obtained a CY-BOCS total score of 15 (mild OCD) as he again began to display worries situated around germs and was once again blocking his brother's coughs.

Michael's secondary outcome scores. The COIS-R (Piacentini & Jaffer, 1998) and Quality of Life Questionnaire (Feldman et al., 2002) were used to rate the extent that a child's OCD interfered with their daily functioning. At pre-treatment, Michael received a score of 23 on the COIS-R, indicating that OCD was causing interferences in his daily life. This score decreased at post-treatment (score of 9) and remained low during the 6-week and 8-month follow-up (score of 2 and 3). Similarly, Michael's score on the Quality of Life Questionnaire decreased 42% from pre to post-treatment and decreased an additional 10% at the 6-week follow-up. During the 8-month follow-up, this score increased 3%. Overall, the results of Michael's COIS-R and Quality of Life Questionnaire results suggest that OCD was interfering less with his life at post-treatment and the 6-week and 8-month follow-up. The consumer satisfaction questionnaire administered at post-treatment as well as the 6-week and 8-month follow-up

indicated that Michael's mother felt high satisfaction with the treatment provided to her son.

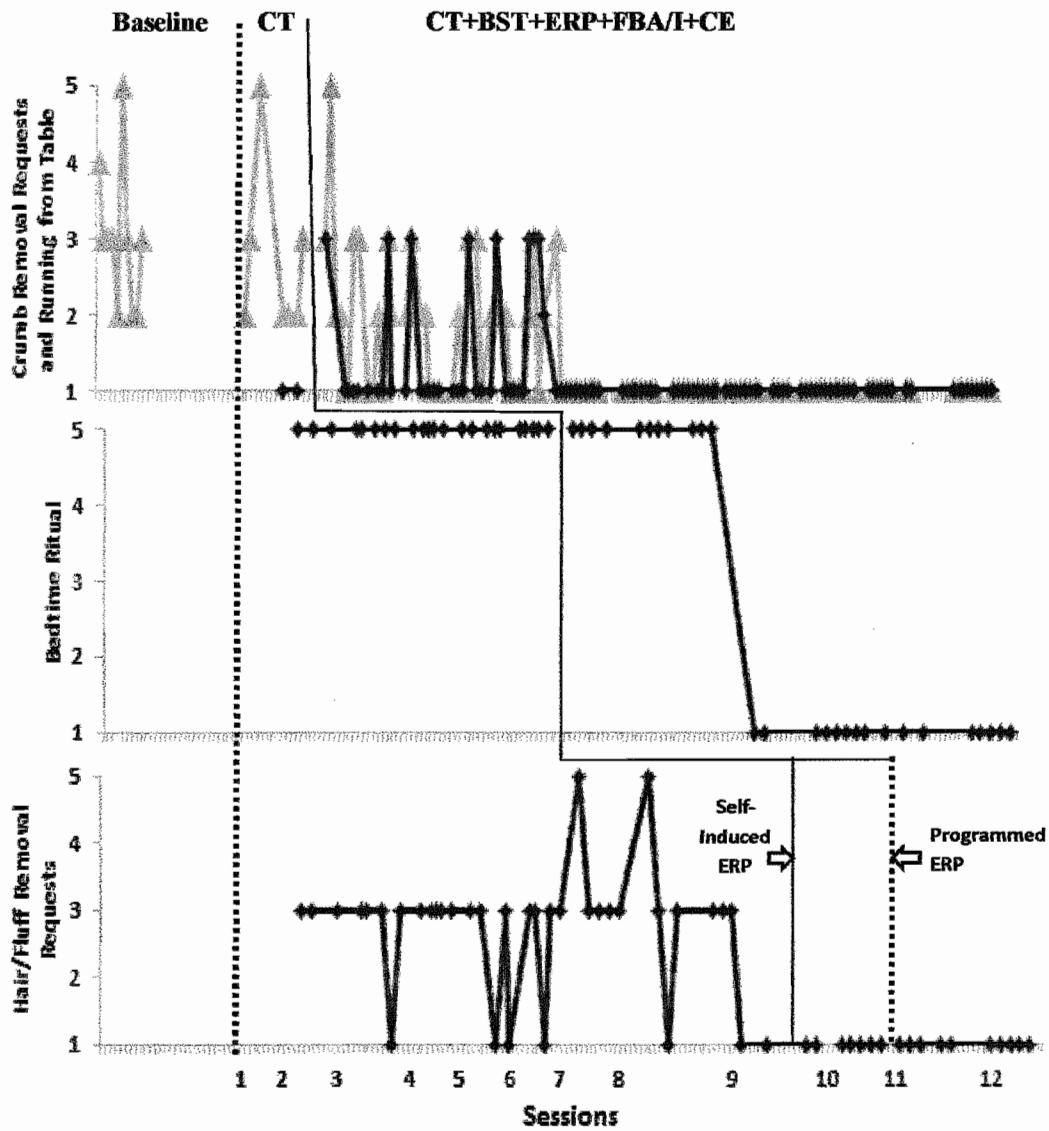
Visual Inspection of Edward's Parent Report and Probe Data

Three of Edward's OCBs were included in his multiple baseline designs using parent report data (See Figure 3) and probe data (See Figure 4). Edward's multiple baseline designs also mirrored one another as they displayed similar levels, trends, and variability throughout baseline and across the two phases of treatment. Treatment effects were not evident for any of his OCBs until individualized treatment plans were implemented in the second phase of treatment. Since there were occasions where Edward requested crumbs, hair and fluff to be removed when none were present and because a voice recorder was used to collect probe data on Edward's requests to remove hair and fluff, his mother was asked to fill out a brief questionnaire (containing yes/no questions) anytime she collected probe data on her son's first and third treated OCBs (requests to remove crumbs, hair and fluff). See Appendix M and N for a copy of the crumb and hair and fluff probe questionnaires. These data began to be collected for Edward's first treated OCB during the third week of baseline and during the first week of treatment for his third treated OCB.

Edward's experiences with the CBT components in phase 2. In phase 2, Edward did not create coping or additional externalizing statements, although the therapists attempted to encourage him to do so with prompts, verbal praise, and tokens. He did continue to occasionally practice statements created in phase 1, but only when prompted. The therapists incorporated one of his externalizing

Figure 3

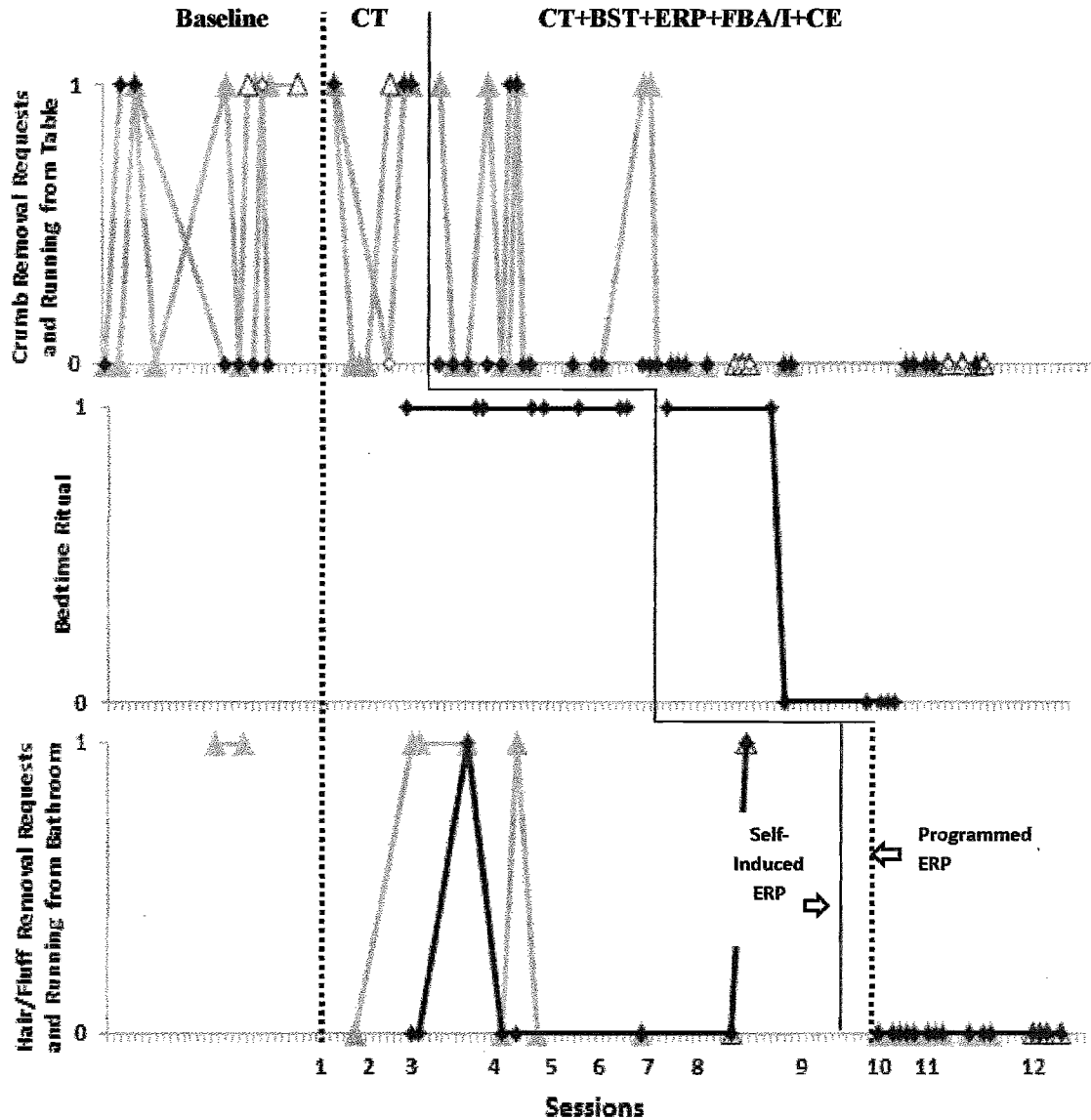
Multiple baseline across Edward's treated OCBs using parent report data



Graph 1: Black diamonds = frequency data of Edward running from the table before mealtime; Grey squares = frequency data of Edward requesting for crumbs to be removed before mealtime

Figure 4

Multiple baseline across Edward's treated OCBs using video and voice recorded data



Graph 1: Black diamonds = Edward running from the table before mealtime; Grey squares = Edward requesting crumbs be removed before mealtime; Light grey data points outlined in black = data collected using the crumb questionnaire.

Graph 3: Black diamonds = Edward running from the bathroom before brushing his teeth; Grey squares = Edward requesting hair/fluff be removed from the bathroom sink before brushing his teeth; Light grey squares outlined in black = data collected using the hair/fluff questionnaire.

statements into each of his OCBs' individualized treatment plans and encouraged him to use them when doing ERP homework assignments. While learning how to do the behavioural tools at the onset of phase 2, Edward was willing to practice diaphragmatic breathing, PMR, and counting from one to ten only one time - in session three. Although he verbalized that he didn't want to include any behavioural tools in his first OCB's treatment plan, the therapists incorporated PMR and counting from one to ten and he was encouraged to use them.

Since Edward was adamant about not using behavioural tools, none were incorporated into his remaining two OCB treatment plans. Regarding the development of Edward's ERP homework assignments, his mother was responsible for assisting the therapists with creating them, although he did initiate how his second OCB's individualized treatment plan should be altered. Two key behavioural strategies were utilized to increase the probability that Edward would carry out his ERP homework which included: altering setting events so that environments associated with OCBs became predictable (e.g., making sure paper towels were placed by the bathroom sink so Edward always had something to wipe away hairs/fluffs), and incorporating choices that enabled Edward to control how an ERP homework assignment would be carried out (e.g., Edward chose who would scratch his feet/in what order they would be scratched). Although Edward was typically resistant to implementing new ERP homework assignments, with much prompting, reinforcement, and encouragement, he was willing to partake in them.

Individualized treatment plans for Edward's OCBs. Throughout baseline and treatment, there were occasions where Edward's mother completed the questionnaires only. This data was incorporated with Edward's video and voice-recorded data as high levels of accuracy existed between the two (accuracy rate between these two forms of data for Edward's first treated OCB was 90% and 95% for his third treated OCB). Edward was unwilling to participate in the ERP homework assignment for his first treated OCB (requests to remove crumbs). However, once the researchers altered this behaviour's ERP task by making it more predictable (e.g., Edward helped his mother set the table and observing where the crumbs lie) and incorporating elements that Edward was in control of (e.g., deciding which side of the table the crumbs should be placed), he completed them. Edward was observed to use his assigned externalizing statement on a few occasions when this OCB was treated and informed one of the therapists that he was beating OCD by sitting with the crumbs.

Baseline data were not obtained for Edward's bedtime ritual as it did not become a treatment goal until session two, nonetheless, the data obtained during phase 1 of treatment for this OCB demonstrated that this OCB was occurring at a very high, stable frequency level of 5.0 and was observed to occur on 100% of the probe recordings. Edward was also resistant to implementing this OCB's ERP homework assignment. During the second week that this OCB received its individualized treatment plan, Edward initiated how his ERP homework should be altered by choosing who scratches his feet, along with choosing how they should

be scratched. After these alterations were made, he completed his ERP tasks and his bedtime ritual decreased to zero frequency levels.

Regarding Edward's third treated OCB, requests to remove hair and fluff, a limited amount of baseline data were also obtained on this OCB. Nonetheless, the data obtained during baseline and phase 1 of treatment demonstrated that this behaviour occurred at an average frequency level of 2.91 and happened 58% of the time that the probe data was collected. It is likely that these are deflated values as Edward's mother reported that she occasionally forgot to plant hairs in the bathroom sink as she was asked to by the researchers. Like Michael, Edward also initiated self-induced ERP which occurred for his third OCB during week nine of treatment. After watching an episode of the television show *Obsessed* where a man received CBT for germ contamination OCBs such as cleaning his house excessively, he called his father to the washroom, wiped a hair out of the bathroom sink with toilet paper, and said "I'm bossing back OCD". Once this self-induced ERP occurred, Edward was no longer observed to request hairs and fluff to be removed from the bathroom.

Edward's compliance enhancement component. The adapted errorless compliance training (Ducharme & Popynick, 1993) component incorporated into Edward's treatment plan resulted in increases in the amount of compliant behaviours he displayed in session and at home. More specifically, he became willing to role play ERP homework assignments and partake in them at home, participate more in group discussions, complete session activities more

frequently, and follow through with three daily chosen demands, as well as additional ones with which he had a history of noncompliance.

Results of Edward's ADIS, CY-BOCS, and Secondary Outcome Measures

Edward's ADIS and CY-BOCS scores. At post-treatment, Edward still met the criteria for OCD according to the ADIS (Silverman & Albana, 1996) and his CY-BOCS total score decreased from 25 (severe OCD) at pre-treatment to 18 (moderate OCD) at post-treatment. Although Edward's treated OCBs were not identified at post-treatment, his mother endorsed behaviours not verbalized throughout the course of this study such as a repeating ritual which involved Edward erasing and rewriting words, and weather reassurance situated around Edward repeatedly asking her questions about if extreme weather was going to occur (e.g., tornados or tsunamis). Additionally, she endorsed a behaviour that she verbalized a few times throughout treatment as no longer being a concern (hoarding small objects) as well as a behaviour that was tracked using the parent report form that occurred extremely infrequently (Edward displaying a strong need to tell family members to wash their hands after coughing/ blowing their nose).

Edward's secondary outcome measures. Edward's COIS-R (Piacentini & Jaffer, 1998) score at post-treatment was 54 and his Quality of Life Questionnaire (Feldman et al., 2002) score was 46, indicating that his OCD was causing interferences in his daily life. Post-treatment data on secondary outcome measures was not obtained for Edward as his mother did not submit them to the researchers. Nonetheless, she reported 1.5 months after treatment that her son

continued to experience treatment gains. Specifically, she stated that arguments about crumbs no longer occurred during mealtime and that Edward continued to eat all his meals with the family. Further, Edward was much more compliant with brushing his teeth once a day (sometimes twice), and he remained flexible in having his feet scratched in various ways/by different people.

Discussions, Activities, and Games Utilized to Increase the Children's Social Skills

As treatment progressed, both children were observed by the therapists and their mothers to display more socially adaptive behaviours. Edward became more willing to participate in group discussion/activities/games, answer questions addressed to him, and initiate a game he enjoyed playing with the therapists. Further, Michael began to greet and say goodbye to Edward at the beginning and end of sessions; on occasion, Michael would independently ask Edward questions during games, and interrupt others less when they spoke.

Discussion

Like earlier investigations (e.g., Lehmkuhl et al., 2008; Reaven & Hepburn, 2003), Michael and Edward displayed OCBs commonly present in children with OCD such as contamination fears and a strong need to know (APA, 2000). This study built upon previous research conducted by McCambridge, Vause, Feldman, Sheen, and Rombough (2009) who utilized an individual function-based CBT protocol to treat OCD in two school-aged children with HFA and demonstrated results similar to those obtained in this study. Specifically, both studies did not demonstrate treatment effects for the children's OCBs during the

CT phase of treatment. Nonetheless, this phase appears to be an important part of the function-based CBT protocol as it provides children with the knowledge necessary to successfully partake in ERP homework assignments (e.g., acknowledging the occurrence of obsessions and compulsions). In the present study, Michael utilized his coping and externalizing statements while partaking in ERP homework assignments and verbalized to the therapists that these cognitive tools assisted him with reducing anxiety. Further, like the McCambridge et al. study, the present investigation also incorporated a FBA/I component as it has repeatedly been demonstrated that behaviours often serve multiple functions (e.g., Carr, 1977; May, Horner, & O'Neill, 1996). Applying FBA/Is to all target behaviours enabled the researchers to identify/address additional hypothesized functions maintaining a child's OCBs (beyond escape from anxiety).

The limited research conducted on CBT as a treatment for OCD in children with HFA has demonstrated that this treatment can decrease OCBs in this population, provided that appropriate enhancements are made to address the cognitive, social, and linguistic challenges associated with an ASD diagnosis. Previous research has required active and consistent parental involvement in the form of attending many sessions, providing information on their child's OCBs, and implementing behaviour management strategies at home (e.g., Sze & Wood, 2007). In the present study, the mothers were needed to assist and/or prompt their child to engage in treatment and to generalize material learned in session to the home. Like the Lehmkuhl et al. study, the present research took into account the children's cognitive and developmental level, and utilized a protracted cognitive

component whereby a simplified version of cultivating nonattachment and psychoeducation were utilized, and ERP commenced sooner than is typically done in CBT. Similar to past investigations, additions to the CBT protocol included the use of visuals for key concepts to explain visually what was discussed verbally as well as providing choices and incorporating participants' interests to motivate participation in treatment (e.g., Reaven & Hepburn, 2003). To further motivate children's participation in CBT, McCambridge et al. (2009) utilized external reinforcers in the form of preferred tangibles and activities, and social praise, which in the present study was provided for treatment compliance in session/at home as well as decreasing OCBs.

Extensions of Previous Research

This study incorporated numerous extensions. The FBAs conducted in the McCambridge et al. (2009) study consisted of administration of the QABF and therapist observations. Along with utilizing the QABF, the present study also collected ABC data on the children's target behaviours. This complemented information obtained from the parents by providing additional, objective information on the potential functions maintaining the children's OCBs. Second, while probe data was obtained for only one of the participant's OCBs in the McCambridge et al. study, the present investigation obtained video or voice recorded probes for the majority of the children's OCBs concurrently with the parent reports. This enabled the researchers to more accurately track the children's progress throughout treatment and compare and contrast the parent report and probe data.

Third, the present investigation extended upon the McCambridge et al. study by anchoring all Likert scale questions on the parent forms to increase the accuracy of the subjective data obtained. Fourth, while previous studies (e.g., Reaven & Hepburn, 2003) used an adapted version of the March and Mulle (1998) CBT manual, the present study created a manual, *I Believe in Me, Not OCB*, (Vause et al., in progress), with an accompanied children's workbook aimed specifically at using CBT as a treatment for OCD in children with HFA. Last, while past studies (e.g., Sze & Wood, 2007) implemented individual CBT, this study utilized a dyad format of this treatment. When compared with individual format of this treatment, dyad CBT provides children the opportunity to build a therapeutic alliance and socially interact with another child. In the present study, both children were observed to engage in more socially adaptive behaviours as the sessions progressed such as initiating games and independently asking the other child questions for example.

Limitations of the Present Study

This research presents several limitations. First, results obtained in this study have limited generalizability as the study consisted of only two participants. A study is currently underway which utilizes an RCT to assess the efficacy of this function-based CBT protocol in a group format of four to five parent-child dyads. Second, there are no parent report and probe data for Edward's second and third treated OCBs (bedtime ritual and requests to remove hair and fluff). Nonetheless, the data on these two OCBs during baseline and/or phase 1 of treatment demonstrated that they were occurring at moderate or high frequency levels.

Third, follow-up assessments were only conducted for Michael, making it unknown if Edward's treatment effects were maintained after his sessions were terminated. His mother did however report 1.5 months post-treatment that her son continued to not display his treated OCBs. Fourth, a limitation resides with utilizing the CY-BOCS (Goodman et al., 1986), which was especially evident for Michael. Although the majority of his OCBs decreased by post-treatment and continued to not occur during the 8-month follow-up, he still met the criteria for OCD. It is possible that this instrument is too sensitive to changes as during these time periods, Michael only exhibited compulsions associated with one of his treated OCBs.

Fifth, the children's parents tended to over endorse items on the QABF (Matson & Vollmer, 1995), especially the nonsocial function. While it is possible that the children's OCBs served this function, this was not identified with the ABC data as the target behaviours only occurred when specific setting events were present, never happened when they were alone, and did not appear to be highly repetitive in nature as the children didn't spend long durations of time engaged in their compulsions. An analogue functional analysis is the only true way to identify functions maintaining a behaviour (e.g, Iwata, Dorsey, Slifer, Bauman, & Richman, 1994; Vollmer, Marcus, Ringdahl, & Roane, 1995). However, it was not feasible to conduct such an analysis due to the amount of OCBs targeted for treatment, as well as the difficulties and time that would be needed to conduct a functional analysis on OCBs that occurred infrequently (e.g., Michael's whiteboard ritual only occurred once per day before he went to bed).

Last, due to the research design used in this study (multiple baseline design), the researchers were unable to tease apart the different components of phase 2 to determine if it was the FBI or the traditional CBT component(s) that led to decreases in the children's OCBs.

Future Research

There are many different avenues that future researchers could investigate. One may include conducting a component analysis with an alternating treatments design to assess which component(s) of the function-based CBT protocol is/are responsible for decreasing OCBs displayed by children with HFA. Future studies are also needed which assess the long-term (e.g., one or two years) treatment outcomes associated with children in this population receiving CBT as a treatment for OCD. In the present study, Michael demonstrated a relapse with his blocking coughs OCB at the 8-month follow-up. This is similar to follow-up data obtained in the McCambridge et al. (2009) study in which both participants experienced brief relapses in contamination OCBs. Future researchers should assess ways to increase maintenance of treatment gains and generalization. This could be achieved by exposing a child to a range of stimuli in their natural environment that have/may trigger the occurrence of an OCB.

Although it has been suggested and anecdotally observed that children with HFA experience social benefits when provided with GCBT (Sofronoff et al., 2005), this study did not collect data on the children's social skills. Future studies aimed at providing dyad or GCBT to individuals in this population need to incorporate measures assessing participants' social skills if the interpersonal

benefits associated with this type of treatment are to be empirically validated (Chalfant et al., 2007). Future researchers may also want to explore the application of CBT as a treatment for rigid and repetitive behaviours associated with an ASD diagnosis. Although there are ways to distinguish this type of behaviour from the presence of clear obsessions and compulsions associated with an OCD diagnosis, the line between these two types of behaviours is often blurred (Lehmkuhl et al., 2008; Matson & Dempsy, 2008). In the present study it was questionable if Michael's first treated behaviour (goodnight statement) was an OCB as the thoughts behind it were unknown. Regardless of if this was an OCB or a rigid and repetitive behaviour, the function-based CBT protocol was successful in eliminating its occurrence.

Implications of the Present Study

This study adds to the limited research conducted on CBT as a treatment for OCD in children with HFA. Along with previous research, the present investigation demonstrates that therapists should incorporate treatment enhancements when implementing CBT to children in this population to meet the challenges associated with their ASD diagnosis. Further, the present study, in conjunction with the McCambridge et al. (2009) study, provides preliminary evidence validating function-based CBT as a treatment for OCD in children with HFA. This research has assisted with the development of an RCT in which the *I Believe in Me, Not OCB* (Vause et al., in progress) manual and children's workbook is utilized. If promising results are obtained, it will deem this function-

based CBT protocol efficacious and be a step towards having it used in clinical settings.

Conclusion

The treatment enhancements utilized in this study appeared to greatly assist the children with understanding therapeutic concepts and assisted with maintaining treatment participation and compliance. Promising results were obtained in this study using the *I Believe in Me, Not OCB* (Vause et al.) function-based CBT protocol to treat OCD in two school-aged children with HFA. It was found that the first cognitive based phase of treatment (CT) was insufficient in reducing the children's OCBs, as treatment effects were not evident until the second phase of treatment was implemented and a target behaviour received its individualized treatment plan. At post-treatment, both parents described great satisfaction with the treatment protocol and Michael's follow-up data demonstrated that treatment gains were maintained up to 8-months post-treatment for the majority of his OCBs.

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Appendix A

Uncontrolled Studies Conducted on GCBT for Typical Children and Adolescents with OCD

Authors	Age	Assessment Tools	Manual	GCBT Information		Findings	
				Group Size	Session Length	Primary	Secondary
1. Fischer, Himle and Hanna (1998)	12-17 (N=15)	CY-BOCS	Based upon work conducted by Krona, Himle and Nasse (1991)	NS	Seven weekly sessions, 90-minutes in length	CY-BOCS scores significantly decreased from pre to post-treatment, with treatment gains maintained at the 6-month follow-up. Large effect size obtained (ES=.54).	Participant feedback indicated that adolescents enjoyed meeting others with their disorder as it aided in normalizing OCD symptoms. Therapists' observations suggest that treatment compliance was facilitated by peer interaction.
2. Thienemann, Martin, Cragg, Thompson and Dyer-Friedman (2001)	13-17 (N=16)	CY-BOCS, NIMH-CGI, MASC, CBCL, PE	Group adaptation of March and Mittle's CBT manual (1996)	5 to 9 participants per group	14 weekly sessions, 2-hours in length	At post-treatment there were significant decreases in OCD symptoms for the majority of participants from severe to moderate. A large effect size was obtained from the GCBT format (ES=1.09).	Weekly participant feedback demonstrated that participants found that the group format provided them with the opportunity to be with and learn from peers with OCD.
3. Himle, Fischer, Van Emen, Janick and Hanna (2002)	12-17 (N=19)	CY-BOCS	Based upon work conducted by Krona, Himle and Nasse (1991)	4 to 6 participants per group	Seven weekly sessions, 90-minutes in length	All participants experienced significant decreases in their CY-BOCS scores at post-treatment with a large effect size (ES=.76).	
4. Martin and Thienemann (2005)	13-17 (N=15) Four participants diagnosed with ASD or nonverbal learning disorders	CY-BOCS, NIMH-CGI, MASC, CBCL, PE	Group adaptation of March and Mittle's CBT manual (1996)	5 to 9 participants per group	14 weekly sessions, 2-hours in length	Results indicated a substantial reduction in OCD symptoms as is evident by a mean reduction of 25% on the CY-BOCS and a large effect size (ES=.98).	

Appendix B

*GCBT Studies Conducted on Children and Adolescents with HFA Displaying**Anxiety Symptoms/ Disorders*

Authors	Age	Research Design	Diagnosis	Assessment	Manual	Modifications	GCBT Information		Findings
							Group Size	Session Length	
1. Sofronoff and Attwood (2003)	10-12	RCT GCBT, GCBT with parental involvement, -Waitlist Condition (N=62)	Anxiety Symptoms	James and the March Test	Exploring Feelings (2004)	High parental involvement, affective education social stories, and activities designed to improve children's range of emotional repair mechanisms	Three participants per group+ two therapists	Six weekly sessions, 2-hours in length	Measures of children's ability to generate strategies for dealing with anxiety provoking hypothetical situations significantly improved across post-treatment and the 6-week follow-up.
2. Chaffert, Rapee and Carol (2007)	8-13	RCT GCBT+ Waitlist Condition (N=47)	Separation Anxiety, Specific Phobia, Social Phobia, Panic Disorder, Generalized Anxiety Disorder	RCMAS, SCAS-P, CATS, SDQ	Group adaptation of the Cool Kids program (2003)	High parental involvement, role-playing, a simplified cognitive component, relaxation techniques, and a strong emphasis on the use of visuals	Six to eight participants per group+ therapists (exact number of therapists not stated)	12 weekly sessions, 2 hours in length+ three booster sessions	71% of participants in the GCBT condition no longer met the criteria for their anxiety disorder at post-treatment.
3. Eaves et al. (2009)	7-14	Control Trial with a Waitlist Condition (N=33)	Anxiety Symptoms	SCARED	Group adaptation of March and Milla's manual CBT (1998)	Intervenor parental involvement, a token reinforcement program, predictability of routines, careful pacing of each	Five participants per group	12 weekly sessions, 1.5-hours in length	Parent reports on the SCARED significantly decreased at post-treatment for participants in the GCBT condition.

Appendix C

Questionnaire About Behaviour Function

Child's name: _____

Name of the person completing the QABF: _____ Date: _____

Target Behaviour: _____

Rate how often the child demonstrates the behaviour in situations where they might occur. Be sure to rate how often each behaviour occurs, not what you think a good answer would be.

	N/A	Never (0)	Rarely (1)	Some (2)	Often (3)
1. Engages in the behaviour to get attention					
2. Engages in the behaviour to escape work or learning situations					
3. Engages in the behaviour as a form of "self stimulation"					
4. Engages in the behaviour because he/she is in pain					
5. Engage in the behaviour to get access to items such as preferred toys, food, or beverages					
6. Does the person seem to engage in the behaviour to get rid of uncomfortable thoughts/ images/impulses					
7. Engages in behaviour because he/she likes to be reprimanded					
8. Engages in the behaviour when asked to do something (i.e., get dressed, brush teeth, etc.,)					
9. Engages in the behaviour even if he/she thinks no one is in the room					
10. Engages in the behaviour more frequently when he/she is ill					
11. Engages in the behaviour when you take something away from him/her					
12. Engages in the behaviour to reduce stress or prevent some dreaded situation from occurring (but the behaviour is not connected in a realistic way with that they are					

in the behaviour

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Appendix D

ABC Checklist Template

ABC CHECKLIST

Client's Name: _____ Target Behaviours: _____

ANTECEDENTS BEHAVIOURS CONSEQUENCES

						Date
						Time of Day
						Positive Attention
						Negative Attention
						Demand or Request
						Alone or no attention
						Denial, removal , waiting
						Transition
						Activity
						Other (write below)
						Positive Attention
						Negative Attention
						Tangible or Activity
						Avoids/Escapes
						Sensory
						None
						Escape from Anxiety
						Comments

General Comments:

Appendix E

Michael's Parent Report Form

Informant: _____

Date: _____

14. In general, how often did M ask for reassurance about germs/illnesses today (ex. Did I get germs on my food?, Am I going to get sick?, Etc.)?

N/A	1	2	3	4	5
	0 times	1 time	2-3 times	4 times	5 or more times

2. How often did M ask for reassurance about germs/illnesses today during breakfast (ex. Did germs get on my food? Am I going to get sick?, Etc.)?

N/A	1	2	3	4	5
	0 times	1 time			2 or more times

3. How often did M raise his hand to block a cough(s) during breakfast today?

N/A	1	2	3	4	5
	0 times	1 time			2 or more times

Number of incidences that occurred during breakfast due to Brady coughing:

1: _____ 2: _____ 3: _____ 4: _____ 5: _____ If more, please state number: _____

Number of incidences that occurred during breakfast due to something other than Brady coughing: (ex. someone else coughing or being sick)

1: _____ 2: _____ 3: _____ 4: _____ 5: _____ If more, please state number: _____

Please state the type of incidence(s) that occurred: _____

4. How often did M ask for reassurance about germs/illnesses today during dinner (ex. Did germs get on my food? Am I going to get sick?, Etc.)?

N/A	1	2	3	4	5
	0 times	1 time			2 or more times

5. How often did M raise his hand to block a cough(s) during dinner?

N/A	1	2	3	4	5
	0 times		1 time	times	2 or more times

Number of incidences that occurred during dinner due to Brady coughing:
 1: _____ 2: _____ 3: _____ 4: _____ 5: _____ If more, please state number: _____

Number of incidences that occurred during dinner due to something other than Brady coughing:
 (ex. someone else coughing or being sick)

1: _____ 2: _____ 3: _____ 4: _____ 5: _____ If more, please state number: _____
 Please state the type of incidence(s) that occurred: _____

6. Did M ask for reassurance today about his bicycle helmet being on securely?

N/A	1	2	3	4	5
	0 times				1 or more times

Please state the number of times that M asked for reassurance about his helmet being on securely

1: _____ 2: _____ 3: _____ 4: _____

7. If rain/a storm occurred this morning, or was scheduled for later in the day, how often did M ask for reassurance about the weather (ex. Am I going to get electrocuted? Will I be ok at school?, Etc.) from the time he woke up until the time he went to school?

N/A	1	2	3	4	5
	0 times	1 time	2-3 times	4 times	5 or more times

Please state the type of weather that occurred today:
 Snow Storm: _____ Thunder Storm: _____ Rain: _____ If other, please state: _____

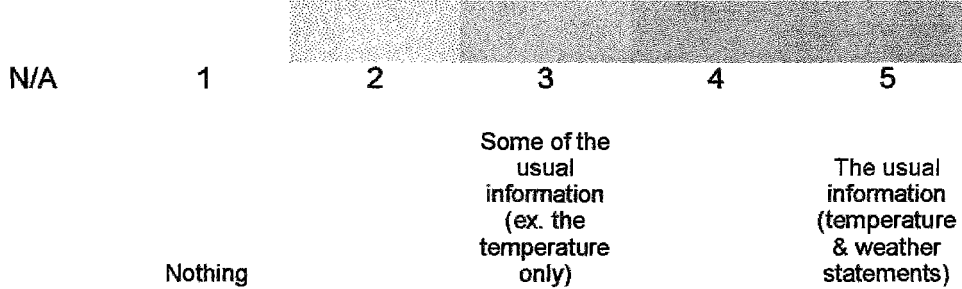
8. Did M watch the weather network today?

N/A	1	2	3	4	5
	No he did not				Yes he did

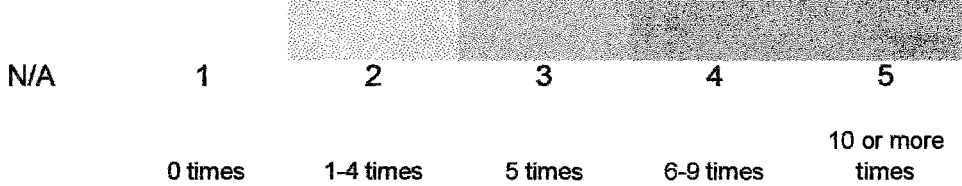
If M did watch the weather network today, did he watch it in the morning or at nighttime?

Morning: _____ Nighttime: _____

9. How much weather information did M write on his whiteboard tonight?



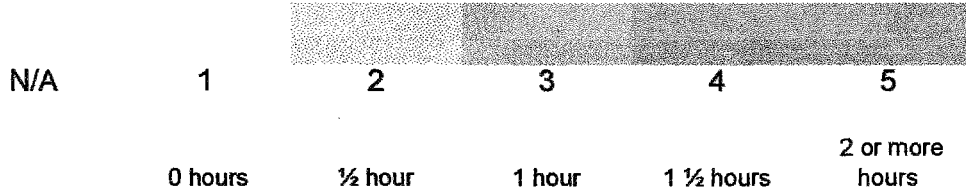
10. If a storm/rain is currently occurring or is scheduled to occur this evening/night, how often did M ask for reassurance when he first went to bed?



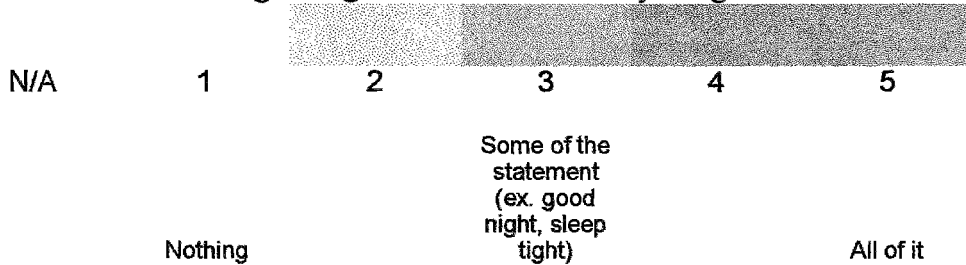
Please state the type of weather that occurred this evening/night:

Snow Storm: _____ Thunder Storm: _____ Rain: _____ If other, please state: _____

11. How long was M up during the night because he was concerned about the weather?



12. How much of M's goodnight statement did he say tonight?



Notes: _____

Appendix F

Edward's Parent Report Form

Informant: _____

Date: _____

14. How many times did E ask for reassurance from germs today (ex. people coughing, passing gas, etc.)

N/A	1	2	3	4	5
	0 times				1 or more times

Please state what made E ask for germ reassurance: Coughing: _____ Sneezing: _____

Wiping/Touching Nose: _____ Passing Gas: _____ If other, please specify: _____

2. How often did E ask you to remove hair/fluff today?

N/A	1	2	3	4	5
	0 times	1 time	2-3 times	4 times	5 or more times

3. Did E ask you to remove hair/fluff today while brushing his teeth?

N/A	1	2	3	4	5
	0 times		1 time		2 or more times

4. Did E ask you to remove hair/fluff today while taking a bath?

N/A	1	2	3	4	5
	0 times				1 or more times

5. Did E vomit today over worries about contamination (ex. hairs, fluff, germs, crumbs, etc.)

N/A	1	2	3	4	5
-----	---	---	---	---	---

No he did
not vomit

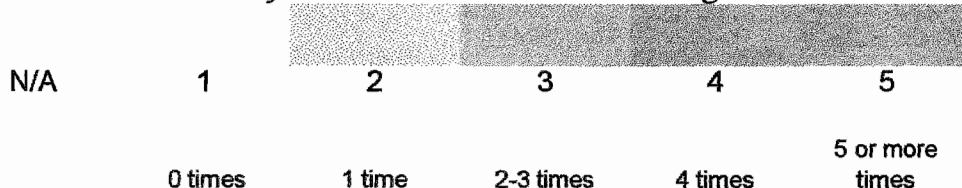
Yes he did
vomit

If E vomited, please state what made him throw up

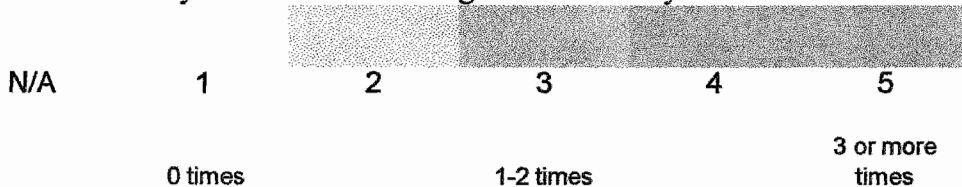
Hair:_____ Fluff:_____ Crumbs:_____ Germs:_____

Other, Please specify:_____

6. How often did E ask you to remove crumbs while eating breakfast?



7. Did E run away from the table during breakfast today?

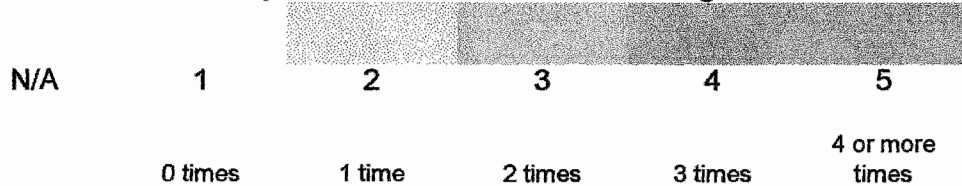


Please state what caused E to run away from the table:

Crumbs:_____ Someone Coughing/Sneezing:_____ Someone Passing Gas:_____

Other, please specify:_____

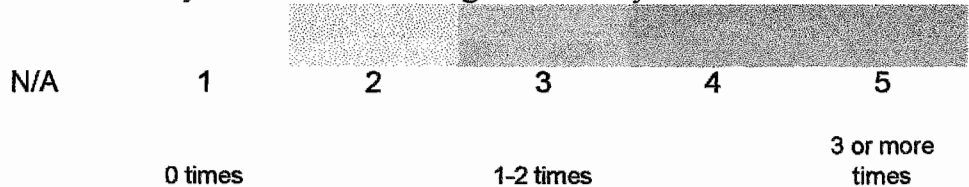
8. How often did E ask you to remove crumbs while eating dinner?



Who moved crumbs:_____

Where were crumbs placed (ex. end of table, in front of E, etc.):_____

9. Did E run away from the table during dinner today?



Please state what caused E to run away from the table:

Crumbs:_____ Someone Coughing/Sneezing:_____ Someone Passing Gas:_____

Other, please specify:_____

10. Did E ask for reassurance about tics, including getting you to check his body?



N/A	1	2	3	4	5
	0 times		After school OR at bedtime		After school AND bedtime

11. How often did E line up his toys when given the opportunity to do so (Ex. had multiple items present such as cars, markers, etc.)?

N/A	1	2	3	4	5
	0 times		Half of the time you watched E play with his toys he lined them up and half of the time he did not		Every time you watched E play with his toys he lined them up

12. How many times did E ask for reassurance about not running out of gas when in a car today (eg. We're going to run out of gas, are we going to run out of gas, are we going to make it, etc)?

N/A	1	2	3	4	5
	0 times				1 or more times

13. Before going to bed tonight, did E have his feet tickled and/or his back scratched by his parents?

N/A	1	2	3	4	5
	Tolerates mom tickling feet		Switching feet routine with dad		Had his feet tickled

Please state what body parts were tickled/scratched tonight

Top of feet: _____ Bottom of feet: _____ Back: _____

If other body part, please specify _____

Please state who tickled E's feet tonight: _____

Please state who scratched E's back tonight: _____

If other body part, please specify who scratched/tickled E: _____

14. How many windows did E check tonight: 1: _____ 2: _____ 3: _____

Notes: _____

Appendix G

Consent Form

Research Project Title: **Treating Obsessive-Compulsive Disorder in Children with High Functioning Autism and Asperger's Syndrome: Cognitive-Behavioral Treatment with Function-Based Intervention: A Pilot and Randomized Controlled Trial**

Principal Investigator: Dr. Tricia Vause (Brock University)

Co-Investigator: Dr. Maurice Feldman (Brock University)

Sponsor of Research: Brock University

*This research is supported by a *New Investigator Fellowship* awarded from The Ontario Mental Health Foundation.

This description, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

What is the purpose of the study?

For children with High Functioning Autism (HFA) or Asperger's syndrome (AS) who also have a diagnosis of Obsessive Compulsive Disorder (OCD), we are interested in understanding more about what types of treatment techniques are helpful in reducing OCD symptoms. We are interested in testing out a combination of behavioral and cognitive-behavioral assessment and treatment methods that have been effective in treating anxiety and behavioral issues in child populations, including children and youth with autism. Each child in the study will be provided with a group treatment program that is modified to take into account his or her unique profile/characteristics, and involves his or her parent(s) through all steps of the process. The purpose of this study is to evaluate whether this cognitive-behavioral treatment package is useful in reducing OCD symptoms to manageable levels, and, in turn, improving both the child and parents' quality of life.

What does the project consist of and how long will the study take?

If you give consent for your child to take part in this project, the primary researcher will:

- Meet with you and your child, and spend one or two 30 min sessions to develop rapport and get to know you
- Conduct indirect assessments (e.g., semi-structured interviews that provide us with information concerning your child's anxiety, a series of

questionnaires such as a Quality of Life questionnaire) and direct assessments (e.g., assessing your child's verbal and nonverbal reasoning skills). The tests that involve yourself and your child will be conducted in order to gather information regarding diagnoses, intellectual, and adaptive functioning. The results of these tests, however, are in no way meant to be a clinical assessment and are not diagnostic. You and your child will also be asked to keep a daily track of OCD symptoms that are identified and defined throughout the study.

Note: If you are taking part in the randomized controlled trial, you will be randomly assigned to the treatment or control group. If you are in the treatment group you will receive treatment as soon as the study commences. If you are in the control group your treatment will be delayed for up to six months. Members of the control group will be asked to complete measures while they are waiting for their treatment.

- Schedule approximately two hour group sessions, once per week for a total of 12 to 15 sessions. As part of the treatment, home visits by the research team may be conducted to get to know your child's home environment, as well as collect assessment and treatment data. The treatment protocol will involve the following components: (a) a general introduction to OCD using a neurobehavioral framework; (b) cognitive training; (c) mapping out OCD symptoms and gaining awareness of duration spent engaging in OCD behaviors; (d) creating a hierarchy of OCD behaviors; (e) use of exposure and response prevention (to which a large number of sessions are dedicated); and (d) relapse prevention and training for generalization. During the implementation of the protocol, a function-based assessment will be conducted for OCD behaviors, and interventions will be derived as appropriate and added to the ongoing CBT. Altogether, the study will take about 35 hours of you and your child's time.
- **During the course of this study we ask that your child does not participate in additional psychosocial OCD interventions so that the results obtained in this study are reflective of the treatment provided.**

What personal information of my child will be accessed by the research staff?

The researcher will access (if applicable) the following information from each parent: the age, diagnosis, level of functioning, previous intellectual and adaptive behavior assessments, previous psychological assessments, and use of medication. In order to avoid possible confounds you are asked to refrain from making any changes to any anxiety medications or other treatments your child may be receiving. If such changes are necessary, the researcher needs to be informed of the changes.

Will my child's personal information be kept confidential?

All information will be kept confidential and stored in a locked office. Only the research staff will have access. Any presentations, reports, or publications about the project will not contain any identifying information, unless you give permission to the researchers to show video clips of your child. The information will be kept indefinitely, and will only be used for educational purposes.

Exceptions to this confidentiality include any situation where a child is observed to be at-risk for abuse or neglect; we have a legal duty to file a report under Section 13 of the Child, Family, and Community Service Act. In any situation where a child is observed to put him or herself at risk, we will follow guidelines outlined by the College of Psychologists of Ontario.

Videotaping of sessions will take place to ensure treatment integrity and for purposes of data collection. Videotapes will be viewed by project staff only, and will be kept in a locked office. On some occasions, research staff will observe the session through a one-way mirror, in order to observe the assessment and treatment, as well as to collect data in order to ensure that the treatment is being implemented accurately.

What are the risks and benefits in taking part in the study?

Generally, the procedures used in this study present no risks to your child beyond what you might encounter in everyday activities. When certain procedures are introduced, it is possible that there may be a short-term increase in worry or stress. However, in the long-term, it has been shown that exposure to these procedures has led to a reduction in symptoms.

Participants will benefit directly in that we will determine what OCD symptoms your child presents, conduct an individualized assessment and intervention with the goal of symptom reduction, as well as increase the quality of life for you and your family.

Will I receive the results of the study?

If you wish to have a written description of the results, please check YES in the appropriate box at the end of this form and we will send you a summary of the purpose of the study, general findings, as well relevant information concerning your child within 3 months after the completion of the study.

Is there any payment or cost for participating?

No. There is no payment or cost for participating in this research project.

Is participation voluntary?

Participation is voluntary. Whether you give consent for your child to take part in the study will in no way affect any services that you or your child may be receiving now or in the future. Moreover, even after you give consent, you can stop any time and for any reason by simply calling the principal investigator listed at the end of the consent form. If the principal investigator determines that you are a better match for another study offering a comparable behavioral assessment and treatment, you will be notified of this and be given the option to participate. If you would like to seek other alternatives beyond participation these research studies, please contact Autism Ontario, Niagara Chapter at 905-682-2776.

Last, the cooperation of your child to continue in this study (e.g., their willingness to come with you to a session and to work with the research project staff) will be monitored throughout the study. If at any time your child does not want to participate, that decision will be respected and the session will be cancelled/rescheduled. If you feel that your child is unable to communicate this to us, we will rely on you to let us know if and when to stop the sessions. If this happens on a continual basis (e.g., several times in a row), we will accept this as a possible indication that your child does not wish to continue and will discontinue his or her participation from the project. Of course, we will discuss this with you before the decision is made.

Will I be contacted in the future for other studies?

The results of this research may lead to other related studies in the future that may be beneficial to your child. Please check the appropriate box at the end of this form and provide your contact information in the provided area if you would like to be contacted directly by the researchers in the future about other studies.

Signing the Consent Form

Signing the following page of this *Project Description and Consent Form* indicates that you have understood to your satisfaction the information regarding participation in the research project and agree for your child to participate. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. This study has received ethics clearance through REB file # 09-066. The Research Ethics Officer can be contacted at mailto: reb@brocku.ca or (905) 688-5550 ext. 3035, and can provide responses to questions about the research participant's rights.

Principal Investigator:
ext.3559

Dr. Tricia Vause, Phone: (905) 688-5550,

Signatures

I _____, hereby:

(Parent/Guardian – please print your name)

consent to my participation and my child’s participation in completing direct and indirect assessments.

consent to _____’s participation in this study.
(please print child’s name)

By giving consent I allow the research project staff to:

- Work with me and my child in weekly two-hour group sessions for **12 to 15 weeks. Home visits may also take place.**
- Conduct developmental and adaptive functioning assessments that involve me and my child.
- To obtain personal information, including: age, diagnosis, level of functioning, previous intellectual and adaptive behavior assessments, and previous psychological assessments.
- Videotape my child, in order to ensure treatment integrity, for purposes of data collection and, if I give permission below, to show clips for educational purposes at talks and conferences for parents, students, and professionals. The raw footage of the videotapes will be viewed by project staff only, and will be kept in a locked office. The videos will be kept indefinitely, but will to be used for educational purposes only, if permission is given below.
- Include my child’s results in publications, reports, and talks, so that others may learn from this project.

I understand that I can revoke or amend this consent at any time and for any reason. The consent will otherwise remain in effect for a period of 24 months from the date it is received.

<i>Please check YES or NO for the following items:</i>	YE S	N O
• I would like to receive the results of this study.		
• I allow the researchers to share my child’s results with authorized staff.		
• I allow the video clips of my child to be shown for educational purposes at talks and conferences (see above for details)		
• The researchers may contact me directly for possible future related studies.		

_____ Signature of Parent/Guardian	_____ Date	
_____ Name of Researcher/Delegate	_____ Signature of Researcher/Delegate	_____ Date

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Please return all 4 pages of this *Project Description and Consent to Participation Form* in the enclosed stamped envelope to the principal investigator. Keep the extra copy for your records. Thank you for cooperation.

If you wish to be contacted by the researchers in regard to possible participation in future research studies please provide your contact information below.

Name	Telephone Number	Email
Address		

Appendix H

Assent Form

Research Project Title: **Treating Obsessive-Compulsive Disorder in Children with High Functioning Autism and Asperger's Syndrome: Cognitive-Behavioral Treatment with Function-Based Intervention: A Pilot Study and Randomized Controlled Trial**

Principal Investigator: Dr. Tricia Vause, Ph.D. (Brock University)

Co-Investigator: Dr. Maurice Feldman, Ph.D. (Brock University)

Sponsor of Research: Brock University

*This research is supported by a *New Investigator Fellowship* from the Ontario Mental Health Foundation.

This description, a copy of which will be left with you, will tell you what the research is about if you decide that you would like to be part of it. If you have questions or would like more of an explanation about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this, and to understand any other information that is given to you.

What is the purpose of the study?

We are interested in understanding more about what types of treatments might be helpful in reducing your worries, uncomfortable thoughts, or behaviors that you feel that you have to do. We are interested in testing out a combination of different methods that have helped in treating worries, thoughts that bother you, etc. You will be provided with a treatment program that takes into account your needs, and your parent(s) will be involved throughout all steps of the process. The purpose of this study is to see if the treatment program that you will be provided with is useful in reducing thoughts and things you feel that you have to do that may bother you, and, in turn, improving both you and your family's quality of life.

What does the project consist of and how long will the study take?

If you decide you would like to take part in this project, the primary researcher will:

- Meet with you and at least one parent, and spend one or two 30 minutes meetings getting to know you and your parent(s)
- Information will be gathered from yourself and at least one of your parents on challenges that you may face.
- We will ask you questions about your life and about your fears, worries or behaviors that you feel you have to do. These questions will be asked in order to better understand how we can help you. Also, you and your parent will be asked to keep a daily track of worries and behaviors that you would

like to stop doing. These thoughts and behaviors will be recorded and tracked throughout the entire study.

- Schedule two hour group sessions with you and your parent, once per week for a total of 12 to 15 *sessions*. We may also arrange some home visits. These sessions will involve the following: (a) exploring your thoughts and behaviors; (b) helping you change your thoughts and behaviors by teaching you ways to “talk back” to OCD (c) tracking your worries and behaviors and gaining awareness of the time spent engaging in these behaviors; (d) creating a list of fears and behaviors and listing them in terms of how much fear they make you feel (e) exposing you to feared things and teaching you ways to help reduce the fear (f) helping your worries to stay out of your life for good, in all areas of your life including home, school etc. Throughout our time spent together, you will be asked to track your thoughts, worries, feelings and behaviors on a sheet. This will help us to address your needs. Altogether, we estimate the study will take about 35 hours of you and your parent’s time.
- During the course of this study we ask that you do not participate in additional OCD interventions so that the results obtained are reflective of the treatment you are provided with.**

What personal information of mine will be accessed by the research staff?

The researcher will access (if applicable) the following information: your age, diagnosis, previous assessments related to how you are doing in general (in school, home, etc.), and use/change in medication

Will my personal information be kept confidential?

All information will be kept private and stored in a locked office. Only the research staff will have access to your personal information.

Videotaping of sessions will take place to ensure everything is running smoothly and to see if you are in fact benefiting from the treatment. Videotapes will be viewed by project staff only, and will be kept in a locked office. Any presentations, reports, or publications about the project will not contain any identifying information, unless you give permission to the researchers to show video clips of you. The information will be kept indefinitely, and will only be used for educational purposes.

On some occasions, research staff will observe the session through a one-way mirror, in order to observe the assessment and treatment, as well as to collect data in order to ensure that the treatment is being implemented accurately.

Exceptions to this confidentiality include any situation where you are seen to be at-risk for abuse or neglect; we have a legal duty to file a report under Section 13 of the Child, Family, and Community Service Act. In any situation where you are

observed to put yourself at risk, the researchers will follow guidelines outlined by the College of Psychologists of Ontario.

What are the risks and benefits in taking part in the study?

Generally, the procedures used in this study present no risks to you beyond what you might encounter in everyday activities. When certain procedures are introduced, it is possible that there may be a short-term increase in worry or stress. However, in the long-term, it has been shown that exposure to these procedures has led to a reduction in worries.

You will benefit directly from this study in that we will determine what worries/thoughts and bothersome behaviors are present, and will teach you ways to “beat” or “fight back” OCD. In the end, we hope you will be better able to manage your worries, feelings and behaviors which will hopefully make things easier on you and your family.

Will I receive the results of the study?

If you wish to have a written description of the results, please check YES in the appropriate box at the end of this form and we will send you a summary of the purpose of the study, general findings, as well relevant information concerning your individual performance within 3 months after the completion of the study.

Is there any payment or cost for participating?

No. There is no payment or cost for participating in this research project.

Is participation voluntary?

Participation is voluntary. Whether you agree to take part in the study will in no way affect any services that you may be receiving now or in the future. Moreover, even after you give consent, you can stop any time and for any reason by simply calling the principal investigator listed at the end of the consent form. If the principal investigator determines that you are better suited for a comparable treatment, you will be contacted and asked if you could like to participate. If you would like to seek other alternatives beyond participation in this research study, your parent can contact Autism Ontario, Niagara Chapter at 905-682-2776.

Last, if at any time during the study you do not want to participate, that decision will be respected and the session will be cancelled/rescheduled. If this happens on a continual basis (e.g., several times in a row), we will accept this as a possible indication that you do not wish to continue and will discontinue participation in the project. Of course, we will discuss this with you before the decision is made.

Will I be contacted in the future for other studies?

The results of this research may lead to other related studies in the future that may be beneficial to you. Please check the appropriate box at the end of this form and provide your contact information in the provided area if you would like to be contacted directly by the researchers in the future about other studies.

Signing the Consent Form

Signing the following page of this *Project Description and Consent Form* indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. This study has received ethics clearance through REB file # 09-066. The Research Ethics Officer can be contacted at mailto: reb@brocku.ca or (905) 688-5550 ext. 3035, and can provide responses to questions about the research participant's rights.

Principal Investigator:

Dr. Tricia Vause, Phone: (905) 688-5550,

ext.3559

Signatures

I _____, hereby:

(Child's name)

assent to my participation in completing direct and indirect assessments.

By giving assent I allow the research project staff to:

- Work with me and my parent in weekly two-hour sessions for 12 to 20 weeks.
- Conduct developmental and adaptive functioning assessments that involve me and my parent.
- To obtain personal information, including: age, diagnosis, previous intellectual and adaptive behavior assessments, and previous psychological assessments.
- Videotape me, in order to ensure treatment integrity, for purposes of data collection, **if I give permission below**, and to show clips for educational purposes at talks and conferences for parents, students, and professionals. The raw video footage will be viewed by project staff only, and will be kept in a locked office. The videos will be kept indefinitely to be used for educational purposes only, **if permission is given below**.
- Include my results in publications, reports, and talks, so that others may learn from this project.

I understand that I can revoke or amend this assent at any time and for any reason. The assent will otherwise remain in effect for a period of 24 months from the date it is received.

<i>Please check YES or NO for the following items:</i>	Y E S	N O
• I would like to receive the results of this study.	<input type="checkbox"/>	<input type="checkbox"/>
• I allow the researchers to share my results with authorized staff.	<input type="checkbox"/>	<input type="checkbox"/>
• I allow the video clips of me to be shown for educational purposes at talks and conferences for parents, students and professionals.	<input type="checkbox"/>	<input type="checkbox"/>
• The researchers may contact me directly for possible future related studies.	<input type="checkbox"/>	<input type="checkbox"/>

_____ Signature of Participant	_____ Date	
_____ Name of Researcher/Delegate	_____ Signature of Researcher/Delegate	_____ Date

Appendix I

Reinforcement Assessment

Name: _____

Date: _____

Favourite Foods/Beverages (ex. specific types of chocolate bars, fruits, pop, etc.)

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____

Favourite Toys (ex. specific types of books/magazines, cards, video/board games, action figures, etc.)

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____

Favourite Activities (ex. Going to see a movie, bowling with friends, going on walks, etc.)

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____

Preferred Forms of Social Praise (ex. high fives, verbal praise, receiving a checkmark for work accomplished, etc.)

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____

Appendix J

ERP Homework Sheet Template

Stairs of Learning

This Week's Goal: _____

Things I will do to boss back OCD this week!

1. _____
2. _____
3. _____

Instructions

- Place a ✓ in a box every time you boss back OCD!

Goals:

<input type="checkbox"/>	<input type="checkbox"/>	Reward!
<input type="checkbox"/>	<input type="checkbox"/>	Reward!
<input type="checkbox"/>	<input type="checkbox"/>	Reward!
<input type="checkbox"/>	<input type="checkbox"/>	Reward!
<input type="checkbox"/>	<input type="checkbox"/>	Reward!

Appendix K

Example of a Session Treatment Integrity Checklist

Treatment Integrity
Session #4

Observer: _____

Date Reviewed Session: _____

Date of Session: _____

N/A	YES	NO	Reviewed last week's materials (Completed the Quality of Life exercise)
N/A	YES	NO	Reviewed children's homework assignments
N/A	YES	NO	Reviewed and discussed the children's stimulus maps (OCD Zone, Me/OCD Zone, Me zone)
N/A	YES	NO	Played a fun game
N/A	YES	NO	Had a break
N/A	YES	NO	Choose behaviours that children were to tackle this week
N/A	YES	NO	Had children think/write out externalizing statements
N/A	YES	NO	Psychoeducation: discussed why germs are bad and sometimes good
N/A	YES	NO	Had children think/write out coping statements
N/A	YES	NO	Played another game while parents completed QABF
N/A	YES	NO	Reviewed anxiety reduction techniques
N/A	YES	NO	Had children and parents pick weekly rewards
N/A	YES	NO	Review with parents what ERP homework will be for coming week

Appendix L

**Example of a Treatment Integrity Checklist Form for the FBI Instructions
Provided to Parents**

Instructions	Followed: Y/N	Notes
Set napkins on table		
Call Edward to the table and have him move crumbs to other location on table/leave them where they lay		
If he runs, make sure he returns and finishes eating		
Ignore Edward if he talks about crumbs		
If right after talking about crumbs, E discusses other things (e.g., what he did at school), provide him with attention		
Praise E for doing ERP homework and for using coping tools		

Appendix M

Edward's Crumb Questionnaire

Observer: _____

Meal (breakfast or dinner): _____

Date: _____

1. Are there crumbs on the table?	2. Did Edward ask you to remove crumbs?	3. Did Edward run away from the table when he saw crumbs?

Appendix N

Edward's Hair/Fluff Questionnaire

Observer: _____

Date: _____

1. Was there hair/fluff in the sink?	2. Did you plant a hair in the sink?	3. Did Edward ask you to remove hair from the sink?	4. Did Edward run from away from the sink when he saw hair/fluff?